



Bristol-Myers Squibb Manufacturing Company

***RCRA Corrective Action Program
Quarterly Progress Report No. 65
4th Quarter 2016***

***Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico***

January 2017



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1.0 *Introduction*

Bristol-Myers Squibb Manufacturing Company (BMSMC) is currently implementing a Resource Conservation and Recovery Act (RCRA) Corrective Action Program at its pharmaceutical manufacturing facility located in Humacao, Puerto Rico. The program is being conducted in accordance with the provisions of Module III of BMSMC's Final RCRA Hazardous Waste Treatment and Storage Permit No. PRD090021056.

This quarterly progress report has been prepared in accordance with the provisions of Module III, Condition B.8 (a) of the Permit. The report covers the period October 1, 2016 through December 31, 2016. All available information required by Condition B.8 (a)(i) through (viii) is provided below.¹

The RCRA Corrective Action Program addresses three solid waste management units (SWMUs) at which impacts to soil and/or groundwater have been detected. The status of the corrective action program at each SWMU is briefly described below.

- Former Underground Tank Farm (SWMU #3) – The Former Tank Farm (FTF) area consisted of 26 underground storage tanks for the storage of raw materials, kerosene and spent solvents for reclamation. BMSMC submitted a Corrective Measure Study (CMS) Report to United States Environmental Protection Agency (USEPA) in June 2007 that documented the improving groundwater quality and provided recommendations for the Final Corrective Measure. An updated CMS report was submitted to the USEPA in July 2011.

BMSMC conducted quarterly groundwater sampling at seven wells at this SWMU from March 2000 to December 2010 as part of the site-wide monitoring program. On March 12, 2010 BMSMC submitted a request for a permit modification to reduce the groundwater monitoring program. Based on USEPA comments, BMSMC submitted a revised request for a permit modification to the USEPA on July 20, 2010. BMSMC received approval for the permit modification from the USEPA on December 29, 2010. The reduction in groundwater monitoring as detailed in the permit modification was initiated during the March 2011 groundwater sampling event. As per the permit modification, monitoring wells at SWMU #3 are sampled semiannually. Semiannual sampling started with the March 2011 sampling event.

¹ A PDF version of the complete Quarterly Progress Report No. 65 including text, tables, figures, and appendices is provided on the back cover of this document.

Monitoring wells MW-17 and MW-18, installed during the 2011 Supplemental Field Investigation, were sampled on a voluntary basis from June 2011 to June 2012. A request to include monitoring wells MW-17 and MW-18 into the SWMU #3 groundwater monitoring network was included in the Class 2 Permit Modification Request filed with the USEPA on May 16, 2012. On August 14, 2012, BMSMC received approval for the Class 2 Permit Modification incorporating monitoring wells MW-17 and MW-18 into the groundwater monitoring network. Monitoring wells MW-17 and MW-18 were incorporated into the groundwater-monitoring network beginning with the September 2012 groundwater sampling event.

A new monitoring well, MW-19, was installed in the Former Underground Tank Farm Area during the Release Assessment Phase 1 Field Program. Installation of this well was proposed by BMSMC in the July 2015 response to USEPA Comments on the 2011 CMS.

- Former Brule Incinerator (SWMU #9) - This SWMU is the site of a former hazardous waste incinerator. The interim corrective measure (ICM) consisted of excavation of petroleum impacted soil. The *Interim Corrective Measure Implementation Report* was submitted to USEPA in February 2002. This report was approved by USEPA in a letter dated March 28, 2002.

A new monitoring well, BR-4, was installed in the Brule area during the Release Assessment Phase 1 Field Program. Installation of this well was proposed by BMSMC in the July 2015 Response to USEPA Comments on the 2011 CMS.

- Building 5 Area (SWMU #20) - This SWMU encompasses an area adjacent to and east of Building 5. BMSMC submitted a revised CMS Report to USEPA in June 2007 that provided recommendations for the Final Corrective Measure. The recommended corrective measure included a combination of source area excavation and Monitored Natural Attenuation (MNA). An updated CMS report was submitted to the USEPA in July 2011.

BMSMC implemented an Interim Corrective Measure (ICM) to address source area soils in the Building 5 Area. The ICM Work Plan, which included four phases of excavation, treatment, and reuse or offsite disposal of impacted soil, was submitted to USEPA in September 2003 and approved by USEPA in December 2004. Four phases of soil excavation and treatment were conducted between 2006 and 2011 during which approximately 7,400 cubic yards of soil was excavated and treated. Each of the

excavation areas (Phase 1 through Phase 4; designated as Areas A through D) are shown on **Figure 1**.

On August 14, 2012, BMSMC received approval for a Class 2 Permit Modification for Temporary Authorization to operate a temporary unit (TU) for the ex-situ treatment of contaminated soil excavated from Area E and the remaining unexcavated soil from Area D that was left in place during the ICM. In addition, the USEPA approved the May 2012 *Temporary Unit Operations and Maintenance Plan* (O&M Plan) and the May 2012 *Building 5 Area Interim Corrective Measure Work Plan Area E*. Area E ICM soil removal activities were conducted from February 6, 2013 through March 2, 2013. Approximately 1,728 cubic yards of impacted soil were removed and placed into the Biopile for treatment. The Area E excavation area is shown on **Figure 1**.

BMSMC conducted quarterly groundwater sampling at the SWMU #20 from March 2000 to December 2010 as part of the site-wide monitoring program. As per the December 2010 approved permit modification, BMSMC initiated a reduced groundwater monitoring program in March 2011. The reduced groundwater monitoring program includes quarterly sampling at seven wells and semiannual sampling at 13 wells. Semiannual sampling was initiated in March 2011. Semiannual samples are collected in March and September.

On August 14, 2012, BMSMC received approval for the Class 2 Permit Modification to reactivate monitoring well D-1. Semiannual sampling of monitoring well D-1 was initiated in September 2012.

On March 13, 2013, BMSMC received conditional approval of the Class 2 Permit Modification Request for the closure of three existing monitoring wells (G-1R2, D-1, and E-1) and the installation of three replacement monitoring wells (G-1R3, D-1R, and E-1R). Conditional approval of the Class 2 Modification Request was granted pending a determination that replacement well G-1R3 complies with the objectives of the groundwater monitoring program and effectively captures the Building 5 COCs.

On September 18, 2013, BMSMC, in response to the conditional approval of the March 13, 2013 Class 2 Permit Modification Request, submitted a technical memorandum to the USEPA demonstrating the effectiveness and adequacy of the replacement monitoring wells D-1R, E-1R, and G-1R3 to capture the Building 5 COCs.

On May 5, 2014, BMSMC submitted a Class 1 Permit Modification requesting an extension of 45 days to remove hazardous soil, and the remaining non-hazardous soil that met the cleanup criteria as provided in BMSMC Permit Temporary Unit Operations and Maintenance Plan, beyond the previously permitted 90 day removal period.

On June 19, 2014, BMSMC received final approval of the Class 2 Permit Modification Request for the closure of three existing monitoring wells (G-1R2, D-1, and E-1) and the installation of three replacement monitoring wells (G-1R3, D-1R, and E-1R).

On November 14, 2014, BMSMC received conditional approval of the *Building 5 Soil Vapor Investigation Work Plan*. The Work Plan was conditionally approved by the USEPA pending the receipt of a revised work plan that addressed minor comments within 45 days of the approval letter. The revised Work Plan was submitted to the USEPA on December 4, 2014.

On February 23, 2015, BMSMC received Comments on the Building 5 Area Source Removal Phase 5 Implementation Report from the USEPA. The comment letter stated that BMSMC must submit a revised *Building 5 Area Source Removal Phase 5 Implementation Report* within 45 days of February 23, 2015. The revised *Building 5 Area Source Removal Phase 5 Implementation Report* was submitted to the USEPA on April 8, 2015.

A new monitoring well pair, S-39S/S-39D, was installed in the Building 5 Area during the Release Assessment Phase 1 Field Program. Installation of this well was proposed by BMSMC in the March 2016 Release Assessment Sampling and Analysis Plan.²

- Site-Wide

On March 14, 2013, BMSMC received the approved USEPA RCRA Permit Application Technical and Administrative Completeness Determination Letter for the May 2010 RCRA Part B Permit Application.

On February 26, 2015, BMSMC received Comments on the Corrective Measures Study Report (July 2011) from the USEPA. In the comment letter, the USEPA stated that BMSMC must submit a revised *Corrective Measures Study Report* within 60 days of February 26, 2015.

² In the July 2016 Response to USEPA Comments on the 2011 CMS, this location was initially targeted for a direct push soil boring only.

On June 3, 2015, BMSMC received a letter from the USEPA that granted a time extension to respond to the Comments on the Corrective Measures Study. In the time extension letter, the USEPA granted a time extension until July 24, 2015 for the submittal of a revised *Corrective Measures Study Report*.

On July 22, 2015, BMSMC submitted the *Response to USEPA Comments on July 2011 CMS Report* to the USEPA. The Response to USEPA Comments proposed additional work in each of the three SWMUs (FTF, Brule, and Building 5 Areas) to address USEPA comments on the July 2011 CMS.

On January 27, 2016, BMSMC submitted a Release Notification Letter to the USEPA that identified certain constituents present in groundwater that are currently not included under the Corrective Action Program.

On February 26, 2016, BMSMC submitted a *Release Assessment Report* to the USEPA that identified specific constituents as new compounds of potential concern (COPCs) in the site's SWMUs.

On March 25, 2016, BMSMC submitted a *Release Assessment Sampling and Analysis Plan*, including an updated *Quality Assurance Project Plan* (QAPP), to complete an onsite groundwater and soil investigation to evaluate potential release(s) of COPCs.

On June 14, 2016, BMSMC submitted a *Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility*, including an updated QAPP, to complete a groundwater investigation to evaluate the potential offsite migration of COPCs in groundwater to the south and southeast of the BMSMC facility.

On August 5, 2016, BMSMC submitted a *Preliminary Notification of Possible Off-site Groundwater Contamination* in accordance with Module III.B.10.a of the Facility RCRA Part B Permit. The Preliminary Notification letter identified the possible off-site migration of low levels of COPCs that exceed background levels under the Ciudad Cristiana community.

On September 7, 2016, BMSMC submitted the *Release Assessment Phase 1 Technical Memorandum* to the USEPA, which presented the findings of the completed Phase 1 groundwater and soil investigation.

On September 7, 2016, BMSMC submitted the *Supplemental Vapor Intrusion Investigation Report Buildings 7, 8, 15, 18, 30, 42* to the USEPA, which presented the

findings of the completed vapor intrusion investigations at Buildings 7, 8, 15, 18, 30, and 42.

On September 9, 2016, BMSMC submitted a *Notification of Possible Off-site Groundwater Contamination* in accordance with Module III.B.10.a of the Facility RCRA Part B Permit. The Notification letter confirmed the off-site migration of low levels of COPCs that exceed background levels under the Ciudad Cristiana residential community.

On September 22, 2016, BMSMC received comments from the USEPA and the Puerto Rico Environmental Quality Board (PREQB) on the March 2016 *Release Assessment Sampling and Analysis Plan* and the June 2016 *Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility*.

- On October 3, 2016, BMSMC requested a 30-day time extension to respond to comments on the Technical Review of March 2016 *Release Assessment Sampling and Analysis Plan* and the June 2016 *Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility*.
- On October 27, 2016, USEPA granted BMSMC an extension for the submittal of the Response to Comments to November 21, 2016.
- On November 21, 2016, BMSMC submitted the *Response to Technical Review of March 2016 Release Assessment Sampling and Analysis Plan and the June 2016 Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility* to the USEPA and PREQB. Attachment 1 contained BMSMC's *Response to EPA Comments on the March 2016 Release Assessment Sampling and Analysis Plan*. Attachment 2 contained BMSMC's *Response to EPA Comments on June 2016 Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility*.
- On November 21, 2016, BMSMC submitted the *Technical Memorandum Proposed Sampling Program Offsite Groundwater – South of Facility* to the USEPA. This document specifically addressed the USEPA's comments on the *June 2016 Release Assessment Phase 2A Sampling and Analysis Plan: Offsite Groundwater – South of Facility* regarding the reduced target analyte list for offsite monitoring wells installed during the Phase 2A Field Program.

On September 22, 2016, BMSMC received comments from the USEPA on the February 2016 *Release Assessment Report*.

- In the October 3, 2016 extension request noted above, BMSMC requested a 30-day time extension to respond to the September 22, 2016 USEPA comments on the February 2016 *Release Assessment Report*. As noted above the USEPA granted BMSMC an extension for the submittal of the Response to Comments to November 21, 2016.
- On November 21, 2016, BMSMC submitted the *Final Release Assessment Report* to the USEPA. The *Final Release Assessment Report* included *BMSMC's Responses to Comments to the February 2016 Release Assessment Report* as Attachment A.

On September 22, 2016, BMSMC received notification that BMSMC's 2015 *Hazardous Waste Minimization Plan* was found to be in accordance with the Facility RCRA Part B Permit.

On October 17, 2016, BMSMC submitted the *Release Assessment, Phase 2A: Offsite Groundwater – South of Facility Technical Memorandum* to the USEPA. The Phase 2A Technical Memorandum presented the findings of the completed Phase 2A groundwater investigation.

On November 2, 2016, BMSMC received comments from the USEPA on the *RCRA Corrective Action Program Quarterly Progress Report No. 62, 1st Quarter 2016*.

- On December 16, 2016, BMSMC submitted the *Response to EPA Comments on the RCRA Corrective Action Program Quarterly Progress Report No. 62, 1st Quarter 2016* to the USEPA.

2.0 Description of Work Completed

A description of corrective action activities completed between October 1, 2016 and December 31, 2016 is presented in this section.

2.1. Site-Wide

2.1.1. Vapor Intrusion Program

- No vapor intrusion sampling occurred during the 4th Quarter 2016.

2.1.2. Release Assessment Phase 1 Program

- Results of the 3rd Q 2016 groundwater samples collected from monitoring wells installed during the Release Assessment Phase 1 Field Program were validated in accordance with USEPA Region 2 guidelines. Phase 1 Release Assessment monitoring well locations are shown on **Figure 2**. The laboratory analytical results and data validation reports are provided on CD in **Attachment A**. Field data sheets are included on CD in **Attachment B**.
- The 4th Q 2016 groundwater sampling event was conducted in December 2016. This was an expanded groundwater sampling event and included each on the new monitoring wells installed during the Phase 1 Release Assessment Field Program (MW-21S, MW-22S, MW-23S, RA-10S, RA-10D, MW-20D, MW-20S, S-35D, S-40D, S-40S, S-41D, S-41S, S-42D, S-42S, S-43D, and S-43S). Groundwater samples were analyzed for the following parameters:
 - Full target compound list (TCL) Volatile Organic Compounds (VOCs) plus Tetrahydrofuran, p-Isopropyl toluene, 1,2,4-Trimethylbenzene, 1,3-Butadiene, Benzyl Chloride, tert-Butyl Alcohol, and tert-Amyl Alcohol according to SW-846 Method 8260C;
 - Full TCL Semivolatile Organic Compounds (SVOCs) plus 1-Methylnaphthalene and 2-Methylnaphthalene, according to SW-846 Method 8270D;
 - Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3)pyrene, and 1,4-Dioxane according to SW-846 Method 8270D with Selective Ion Monitoring (SIM);
 - Low Molecular Weight (LMAs) according to SW-846 Method 8015C by direct aqueous injection (DAI);
 - TCL Organochlorine Pesticides according to SW-846 Method 8081B;
 - Volatile Petroleum Hydrocarbons (VPH) according to Massachusetts Department of Environmental Protection (MADEP) VPH-Revision 1.1; and

- Extractable Petroleum Hydrocarbons (EPH) according to MADEP EPH Revision 1.1.
- Eight of the Phase 1 Release Assessment monitoring wells (MW-20S, MW-21S, MW-22S, MW-23S, RA-10S, S-41S, S-42S, and S-43S) were sampled for the following monitored natural attenuation (MNA) parameters:
 - Alkalinity;
 - Ferric and Ferrous Iron;
 - Manganese;
 - Methane;
 - Nitrate and Nitrite; and
 - Sulfate and Sulfide.
- Results from the 4th Q 2016 sampling event will be included in the 1st Q 2017 Progress Report (April 2017).

2.1.3. Release Assessment Phase 2A Program

- The 4th Q 2016 groundwater sampling event was conducted in December 2016. This was an expanded groundwater sampling event and included each of the monitoring wells installed during the Phase 2A Release Assessment Field Program (OSMW-1S, OSMW-1D, OSMW-2S, OSMW-2D, OSMW-3S, OSMW-3D, OSMW-4S, OSMW-4D, OSMW-5S, OSMW-5D, OSMW-6S, AND OSMW-6D). Phase 2A Release Assessment monitoring well locations are provided on **Figure 3**. Groundwater samples were analyzed for the following parameters consist with the approach proposed in BMSMC's November 21, 2016 *Technical Memorandum Proposed Sampling Program Offsite Groundwater – South of Facility*:
 - Benzene, Methyl-Tert Butyl Ether, tert-Amyl Alcohol, 1,2-Dichloroethane, Chloroform, Dichlorodifluoromethane, and Vinyl Chloride according to SW-846 Method 8260C;
 - Benzaldehyde according to SW-846 Method 8270D;

- Naphthalene, Benzo(a)anthracene, and 1,4-Dioxane according to SW-846 Method 8270D SIM;
- Dieldrin according to SW-846 Method 8081B;
- C9-C10 Aromatics according MADEP-VPH-Revision 1.1; and
- C11-C22 Aromatics according to MADEP-EPH Revision 1.1.
- Six of the Phase 2A Release Assessment monitoring wells (OSMW-1S, OSMW-2S, OSMW-3S, OSMW-4S, OSMW-5S, and OSMW-6S) were also sampled for the MNA parameters listed in Section 2.1.2.
- Results from the 4th Q 2016 sampling event will be included in the 1st Q 2017 Progress Report (April 2017).

2.2. Former Tank Farm Area

- Results of the 3rd Q 2016 groundwater sampling event were validated in accordance with USEPA Region 2 guidelines. Locations of the groundwater monitoring wells are presented on **Figure 4**. The laboratory analytical results and data validation reports are provided on CD in **Attachment A**. Field data sheets are included on CD in **Attachment B**.
- The 4th Q 2016 groundwater sampling was conducted in December 2016. This was an expanded groundwater sampling event and included the FTF Area monitoring wells currently in the groundwater monitoring program (MW-3, MW-5, MW-7, MW-13, MW-14, MW-15, MW-16, MW-17, and MW-18), as well as upgradient monitoring well MW-9, and interior monitoring well MW-19 (installed during the Release Assessment Phase 1 Field Program).³ Groundwater samples were analyzed for the following parameters:
 - Full TCL VOCs plus Tetrahydrofuran, p-Isopropyl toluene, 1,2,4-Trimethylbenzene, 1,3-Butadiene, Benzyl Chloride, tert-Butyl Alcohol, and tert-Amyl Alcohol according to SW-846 Method 8260C;
 - Full TCL SVOCs plus 1-Methylnaphthalene and 2-Methylnaphthalene, according to SW-846 Method 8270D;

³ Monitoring well MW-19 was installed during the Release Assessment Phase 1 Field Program to address USEPA comments on the 2011 CMS to further evaluate the presence of groundwater impacts within the FTF Area.

- Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3)pyrene, and 1,4-Dioxane according to SW-846 Method 8270D SIM;
 - LMAs according to SW-846 Method 8015C by DAI;
 - VPH according to MADEP VPH-Revision 1.1; and
 - EPH according to MADEP EPH Revision 1.1.
- Seven of the FTF Area monitoring wells (MW-3, MW-5, MW-9, MW-16, MW-17, MW-18, and MW-19) were also sampled for the MNA parameters listed in Section 2.1.2.
 - Results from the 4th Q 2016 sampling event will be included in the 1st Q 2017 Progress Report (April 2017).

2.3. Brule Area

- Results of the 3rd Q 2016 groundwater sampling event were validated in accordance with USEPA Region 2 guidelines. Locations of the groundwater monitoring wells are presented on **Figure 5**. The laboratory analytical results and data validation reports are provided on CD in **Attachment A**. Field data sheets are included on CD in **Attachment B**.
- The 4th Q 2016 groundwater sampling was conducted in December 2016. This sampling event included the collection of groundwater samples at monitoring wells BR-1, BR-2, and BR-3, as well as monitoring well BR-4 (installed during the Release Assessment Phase 1 Field Program).⁴ Groundwater samples were analyzed for the following parameters:
 - Full TCL VOCs plus Tetrahydrofuran, p-Isopropyl toluene, 1,2,4-Trimethylbenzene, 1,3-Butadiene, Benzyl Chloride, tert-Butyl Alcohol, and tert-Amyl Alcohol according to SW-846 Method 8260C;
 - Full TCL SVOCs plus 1-Methylnaphthalene and 2-Methylnaphthalene, according to SW-846 Method 8270D;

⁴ Monitoring well BR-4 was installed during the Release Assessment Phase 1 Field Program to address USEPA comments on the 2011 CMS to further evaluate petroleum hydrocarbon impacts in the Brule Area.

- Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3)pyrene, and 1,4-Dioxane according to SW-846 Method 8270D SIM;
 - LMAs according to SW-846 Method 8015C by DAI;
 - VPH according to MADEP VPH-Revision 1.1; and
 - EPH according to MADEP EPH Revision 1.1.
- One of the Brule Area monitoring wells (BR-2) was also sampled for the MNA parameters listed in Section 2.1.2.
 - Results of the 4th Q 2016 sampling event will be included in the 1st Q 2017 Progress Report (April 2017).

2.4. Building 5 Area

- Results of the 3rd Q 2016 groundwater sampling event were validated in accordance with USEPA Region 2 guidelines. Locations of the groundwater monitoring wells are presented on **Figure 6**. The laboratory analytical results and data validation reports are provided on CD in **Attachment A**. Field data sheets are included on CD in **Attachment B**.
- The 4th Q 2016 groundwater sampling event was conducted in December 2016. This was an expanded groundwater sampling event and included the Building 5 Area monitoring wells sampled quarterly (UP-1, A-1R4, A-2R2, G-1R3, S-31R2, S-32, and S-33), Building 5 Area monitoring wells sampled semiannually (E-1R, D-1R, S-29R, S-34, S-35, S-36, and UP-2), and Building 5 Area monitoring wells not currently in the groundwater monitoring program (S-28, S-30, S-37, S-38, and MW-11). In addition, monitoring wells S-39S and S-39D installed during the completion of the Release Assessment Phase 1 Field Program were also sampled during the 4th Q 2016 groundwater sampling event.⁵ Groundwater samples were analyzed for the following parameters:

⁵ Monitoring wells S-39S and S-39D were installed during the Release Assessment Phase 1 Field Program to address USEPA comments on the 2011 CMS to further evaluate the presence of groundwater impacts within the Building 5 Area.

- Full TCL VOCs plus Tetrahydrofuran, p-Isopropyl toluene, 1,2,4-Trimethylbenzene, 1,3-Butadiene, Benzyl Chloride, tert-Butyl Alcohol, and tert-Amyl Alcohol according to SW-846 Method 8260C;
 - Full TCL SVOCs plus 1-Methylnaphthalene and 2-Methylnaphthalene, according to SW-846 Method 8270D;
 - Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3)pyrene, and 1,4-Dioxane according to SW-846 Method 8270D SIM;
 - LMAs according to SW-846 Method 8015C DAI;
 - Full TCL Organochlorine Pesticides according to SW-846 Method 8081B;
 - VPH according to MADEP VPH Revision 1.1; and
 - EPH according to MADEP EPH Revision 1.1.
- Seven of the Building 5 Area monitoring wells (A-1R4, G-1R3, S-32, S-34, S-38, S-39S, and UP-2) were also sampled for the MNA parameters listed in Section 2.1.2.
- Results of the 4th Q 2016 sampling event will be included in the 1st Q 2017 Progress Report (April 2017).

3.0 Summary of Findings

This section presents a summary of findings based on groundwater samples collected as part of the 3rd Q 2016 groundwater monitoring program.

3.1. Former Tank Farm Area

The 3rd Q 2016 groundwater sample results from the Former Tank Farm Area were compared to the USEPA MCLs or the May 2016 USEPA Regional Screening Levels (RSLs) for tap water in cases where MCLs have not been developed.⁶ Groundwater sample results were also compared to the April 2016 Puerto Rico Water Quality

⁶ In addition, since the MCL for Methylene Chloride is less than the Puerto Rico Water Quality Standard for this compound, the MCL was used for comparison purposes.

Standards (PRWQS). MCLs, the May 2016 RSLs for tap water, and the April 2016 PRWQS for the Former Tank Farm Area COCs are provided in the table below.

Parameter	MCL ($\mu\text{g}/\text{L}$)	Tap Water RSL ($\mu\text{g}/\text{L}$)	PRWQS ($\mu\text{g}/\text{L}$)
Acetone	---	14,000	---
MIBK	---	6,300	---
Chloromethane	---	190	---
Methylene Chloride	5	---	46
Xylenes (Total)	10,000	---	---

Validated groundwater analytical results for samples collected in the FTF Area during the September 2016 groundwater sampling event are presented in **Table 1**. Results are grouped by FTF Area COCs and other COPCs, including other VOCs, LMAs, PAHs, VPH, EPH, and SVOCs. USEPA and PRWQS groundwater screening levels, if available are also provided in **Table 1**.

No FTF COCs were detected above their applicable groundwater screening levels. VOC COPCs detected above their respective groundwater screening level included Ethylbenzene, 1,4-Dioxane, and Methyl Tert-Butyl Ether (MTBE). PAH COPCs detected above their respective groundwater screening level included 1-Methylnaphthalene, 2-Methylnaphthalene, Benzo(a)anthracene, and Naphthalene. VPH fractions detected above their respective groundwater screening level included C9-C12 Aliphatics and C9-C10 Aromatics. EPH fractions detected above their screening level included C11-C22 Aromatics and C9-C18 Aliphatics. Other than the PAHs noted above, 4-Chloroaniline was the only SVOC detected above its May 2016 tap water RSL. No LMAs were detected above their respective groundwater screening levels.

3.2. Brule Area

Validated groundwater analytical results for samples collected in the Brule Area during the September 2016 groundwater sampling event are presented in **Table 2**. Results are grouped by analyte group (VOCs, LMAs, PAHs, VPH, EPH, and SVOCs). May 2016 RSLs and April 2016 PRWQSs are also provided in **Table 2**.

1,4-Dioxane was the only VOC COPC detected above its groundwater screening level. VPH fraction detected above their groundwater screening level included C9-C10 Aromatics and C9-C12 Aliphatics. C11-C22 Aromatics was the only EPH fraction detected above its groundwater screening level. 4-Chloroaniline was the only SVOC

COPC detected above its groundwater screening level. No LMAs or PAHs were detected above their respective groundwater screening levels.

3.3. Building 5 Area

The 3rd Q 2016 groundwater sample results from the Building 5 Area were compared to the USEPA MCLs or the May 2016 USEPA Regional Screening Levels (RSLs) for tap water in cases where MCLs have not been developed.⁷ Groundwater sample results were also compared to the April 2016 PRWQS. MCLs, the May 2016 RSLs for tap water, and the April 2016 PRWQSSs for the Building 5 Area COCs are provided in the table below.

Parameter	MCL ($\mu\text{g/L}$)	Tap Water RSL ($\mu\text{g/L}$)	PRWQS ($\mu\text{g/L}$)
Benzene	5	---	5
Ethylbenzene	700	---	530
Toluene	1,000	---	1,000
Xylenes (total)	10,000	---	---
Acetone	---	14,000	---
MIBK	---	6,300	---
Isopropyl Alcohol	---	410	---
Methanol	---	20,000	---

Validated groundwater analytical results for samples collected in the Building 5 Area during the September 2016 groundwater sampling event are presented in **Table 3**. Results are grouped by Building 5 Area COCs and COPCs, including other VOCs, LMAs, PAHs, VPH, EPH, SVOCs, and Organochlorine Pesticides. May 2016 RSLs are also provided in **Table 3**.

The 3rd Q 2016 groundwater sampling results identified the COCs Ethylbenzene and Xylenes at concentrations in excess of MCLs or PRWQSSs. MCLs/PRWQSSs for one or more COCs were exceeded in in-plume wells A-1R4 (Ethylbenzene), G-1R3 (Ethylbenzene and Xylene), S-31R2 (Ethylbenzene), S-32 (Ethylbenzene and Xylene), and S-39S (Ethylbenzene).

The concentrations of Acetone, Benzene, Ethylbenzene, MIBK, Toluene, and Xylene within the Area E soil removal area remain significantly less than their respective pre-

⁷In addition, since the Puerto Rico Water Quality Standard for Ethylbenzene is less than the MCL, this standard was used in lieu of the MCL for comparison purposes.

removal concentrations. Overall concentrations of COCs in Building 5 Area monitoring wells located downgradient of Area E were consistent with past events.

Other COPC VOCs detected above their respective groundwater screening level included 1,4-Dioxane and MTBE. Naphthalene was the only PAH COPC detected above its groundwater screening level. VPH fractions detected above their respective groundwater screening level included C9-C10 Aromatics and C9-C12 Aliphatics. EPH fractions detected above their respective groundwater screening level included C11-C22 Aromatics and C9-C18 Aliphatics. Organochlorine Pesticides detected above their respective groundwater screening levels included 4,4'-DDT, Dieldrin and Heptachlor Epoxide. Other than Naphthalene, no other SVOC COPCs were detected above their respective groundwater screening level. No LMAs were detected above their respective groundwater screening levels.

3.4. Release Assessment Phase 1 Program

Validated groundwater analytical results for samples collected in Release Assessment Phase 1 monitoring during the September 2016 groundwater sampling event are presented in **Table 4**. Results are grouped by analyte group (VOCs, LMAs, PAHs, VPH, EPH, SVOCs, and Organochlorine Pesticides). May 2016 RSLs and April 2016 PRWQSSs are also provided in **Table 4**.

1,4-Dioxane was the only VOC COPC detected above its groundwater screening level in samples collected in the Release Assessment Phase 1 monitoring wells. C9-C10 Aromatics was the only VPH fraction detected above its groundwater screening level. C11-C22 Aromatics was the only EPH fraction detected above its groundwater screening level. No LMAs, PAHS, SVOCs, or Organochlorine Pesticides were detected above their respective groundwater screening levels.

4.0 Summary of Changes Made

- The CMS program is currently under evaluation pending final field activities that may require the expansion of the program to other areas or SWMUs within the facility, and the integration of additional wells into the current Facility Groundwater Monitoring Program among other changes.

5.0 Summary of Public Participation Activities

- No public participation activities occurred during the period of October 1, 2016 through December 31, 2016.

6.0 Summary of Problems Encountered

- There were no problems encountered relating to the RCRA Corrective Action Program during this reporting period.

7.0 Changes in Personnel

- There were no changes in personnel during this reporting period.

8.0 Projected Work for Next Reporting Period

Work scheduled to be performed during the three month period from January 1, 2017 through March , 2017 is described in this section.

8.1. Site-Wide

- The 4th Q 2016 groundwater results for the Release Assessment Phase 1 and Phase 2A monitoring wells will be validated.
- The *Phase 2C Release Assessment Potential Preferential Pathway Evaluation Sampling and Analysis Plan* will be submitted to the USEPA during the 1st Q 2017. BMSMC is planning to begin the sewer bedding/utility assessment field work during the 1st Q 2017.
- The *Phase 2B Release Assessment Sampling and Analysis Plan – Frontera Creek* may be submitted to the USEPA during the 2nd Q 2017 (the Phase 2B evaluation will be performed after the completion of the Phase 2C Potential Preferential Pathway Delineation/Utility Assessment).
- The *On-Site Surface Soil Sampling and Analysis Plan* will be submitted to the USEPA during the 1st Q 2017. BMSMC is planning to complete the on-site surface soil sampling during the 1st Q 2017.
- Monthly depth to groundwater measurements will be collected in monitoring wells located along State Road No. 3. Results of the monthly depth to groundwater measurements will be presented in the subsequent Progress Report.

- Vapor intrusion sampling activities that will be conducted during the 1st Q 2017 include:
 - Semi-annual confirmatory indoor air sampling in Building 30
 - Annual indoor air and sub-slab sampling in Building 8
 - Initial indoor air and a second round of sub-slab sampling in Building 15
 - A second round of indoor air and sub-slab sampling in Building 18
 - Initial indoor air and sub-slab sampling in Building 13
 - Results will be presented in the subsequent Progress Report.
- Monitoring wells installed during the Release Assessment Phase 1 Field Program will be sampled during the 1st Q 2017 groundwater sampling event. Except for the MNA parameters, monitoring wells will be sampled for the same expanded list of analytical parameters that were sampled in December 2016.⁸
- Monitoring wells installed during the Release Assessment Phase 2A Program will be sampled during the 1st Q 2017 groundwater sampling event. Except for the MNA parameters, monitoring wells will be sampled for the same expanded list of analytical parameters that were sampled in December 2016.
- Activities related to hydrogeologic testing and groundwater treatability studies are tentatively scheduled for the 1st Q 2017.
- A Release Assessment Update meeting with the USEPA is scheduled for January 31, 2017.

8.2. Former Tank Farm Area

- The 4th Q 2016 groundwater results will be validated.

⁸ As noted in the November 2016 *Technical Memorandum Proposed Sampling Program Offsite Groundwater – South of Facility*, the analytical parameter list for offsite monitoring wells may be expanded based on the results of the December 2016 groundwater sampling event for monitoring wells located along the southern downgradient perimeter of the Facility.

- The 1st Q 2017 quarterly groundwater sampling event will be conducted in March 2017.
Except for the MNA parameters, monitoring wells will be sampled for the same expanded list of analytical parameters that were sampled in December 2016.

8.3. Brule Area

- The 4th Q 2016 groundwater results will be validated.
- The 1st Q 2017 quarterly groundwater sampling event will be conducted in March 2017.
Except for the MNA parameters, monitoring wells will be sampled for the same expanded list of analytical parameters that were sampled in December 2016.

8.4. Building 5 Area

- The 4th Q 2016 groundwater results will be validated.
- The 1st Q 2017 quarterly groundwater sampling event will be conducted in March 2017.
Except for the MNA parameters, monitoring wells will be sampled for the same expanded list of analytical parameters that were sampled in December 2016.

9.0 Additional Documentation

- Other than the documents listed in Section 1, no additional documentation was submitted to the USEPA during the period October 1, 2016 through December 31, 2017.

Tables

Table 1
Former Tank Farm Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	MW-3 9/16/2016	MW-5 9/2/2016	MW-7 9/16/2016	MW-9 9/23/2016	MW-13 9/16/2016	MW-14 9/14/2016	MW-15 9/14/2016	MW-16 9/22/2016	MW-17 DUP 9/2/2016	MW-17 9/2/2016	MW-18 9/23/2016	MW-19 9/23/2016
FTF Area COC Analytical Results (ug/L)														
4-Methyl-2-pentanone (MIBK)	6300	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<130
Acetone	14000	---	<25	<25	<25	<25	<25	<25	<25	<25	<25J	<25J	<25	<630
Chloromethane	190	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
Methylene Chloride	5	46	<5J	<5	<5J	<5	<5J	<5	<5	<5	<5	<5	<5	<130
Xylene (Total)	10000	---	1.19 J	35	1.7	<2	<2	<2	<2	<2	<2	<2	1.3	4736
Other Volatile Organic Compounds Analytical Results (ug/L)														
1,1,1-Trichloroethane	200	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,1,2,2-Tetrachloroethane	0.076	1.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,1,2-Trichloroethane	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,1-Dichloroethane	2.8	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,1-Dichloroethylene	7	7	<1	<1	<1	<1	<1	<1	<1J	<1J	<1	<1	<1	<25
1,2,3-Trichlorobenzene	7	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
1,2,4-Trichlorobenzene	70	35	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
1,2,4-Trimethylbenzene	15	---	0.42 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.21 J	<25
1,2-Dibromo-3-chloropropane	0.2	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<130
1,2-Dibromoethane	0.05	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
1,2-Dichlorobenzene	600	420	<1	0.49 J	8.4	<1	0.4 J	<1	<1	14.4	<1	<1	1.3	<25
1,2-Dichloroethane	5	3.8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,2-Dichloropropane	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
1,3-Dichlorobenzene	---	320	<1	<1	0.27 J	<1	<1	<1	<1	0.35 J	<1	<1	<1	<25
1,4-Dichlorobenzene	75	63	<1	<1	1.3	<1	<1	<1	<1	2.7	<1	<1	<1	<25
1,4-Dioxane	0.46	---	0.262	0.76	1.57	0.669	<0.1	2.08	3.28	<0.1	6.1	6.2	2.92	0.736
2-Butanone (MEK)	5600	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<130
2-Hexanone	38	---	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<250
Benzene	5	5	0.23 J	2.3	<1	<1	<1	0.23 J	<1	<1	<1	<1	0.6 J	<25
Benzyl Chloride	0.089	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
Bromochloromethane	83	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Bromodichloromethane	0.13	5.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Bromoform	3.3	43	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Carbon Disulfide	810	---	0.75 J	<2	<2	<2	<2	<2	<2	0.28 J	<2	<2	<2	<50
Carbon Tetrachloride	5	2.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Chlorobenzene	100	100	0.32 J	<1	1.3	<1	<1	0.4 J	<1	0.32 J	<1	<1	0.69 J	7.7 J
Chloroethane	21000	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
Chloroform	8	57	<1	<1	<1	<1	<1	<1J	<1J	<1	<1	<1	<1	<25
cis-1,2-Dichloroethylene	70	---	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<25
cis-1,3-Dichloropropene	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Cyclohexane	13000	---	3.1	<1	<1	<1	<1	<1	<1	0.38 J	<1	<1	3.5	<25
Dibromochloromethane	0.87	4	<1J	<1	<1J	<1	<1	<1J	<1	<1	<1	<1	<1	<25
Dichlorodifluoromethane	200	---	<2	<2	13.6	<2	11.5	<2	<2	2.1	<2	<2	<2	<50
Ethylbenzene	700	530	0.32 J	3.1	1.1	<1	<1	<1J	<1J	<1	<1	<1	<1	1840
Freon 113	55000	---	<1	<1	<1	<1	1.6	<1	<1	50.7	<1	<1	<1	<25
Hexachlorobutadiene	0.14	4.4	<1	<1	<1	<1	<1	<1J	<1J	<1	<1	<1	<1	<1
Hexachloroethane	0.33	14	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Isopropylbenzene	450	---	15	20.5	<1	<1	<1	<1	35.1	<1	22.2	22.3	18.2	<25
Methyl Acetate	20000	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<500
Methyl Bromide	7.5	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
Methyl Tert Butyl Ether	14	---	<1	8.2	0.32 J	<1	<1	<1	17.4	<1	2.6	2.3	<1	<25
Methylcyclohexane	---	---	3.3	<1	<1	<1	<1	<1	0.42 J	<1	<1	<1	7.3	<25
Nitrobenzene	0.14	17	<2	<2	<2	<2	<2	<2J	<2J	<2	<2.1	<2	<2	<2
p-Isopropyltoluene	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Styrene	100	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25

Table 1
Former Tank Farm Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	MW-3 9/16/2016	MW-5 9/2/2016	MW-7 9/16/2016	MW-9 9/23/2016	MW-13 9/16/2016	MW-14 9/14/2016	MW-15 9/14/2016	MW-16 9/22/2016	MW-17 DUP 9/2/2016	MW-17 9/2/2016	MW-18 9/23/2016	MW-19 9/23/2016
Tert-Amyl Alcohol	6.3	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<500
Tetrachloroethylene	5	5	<1	<1J	<1	<1	<1	<1	<1	<1	<1J	<1J	<1	<25
Tetrahydrofuran	3400	---	<5	<5	<5	<5	<5	<5	4.2 J	<5	<5	<5	<5	<130
Toluene	1000	1000	0.34 J	0.34 J	<1	<1	<1	<1J	<1J	<1	<1	<1	0.91 J	<25
trans-1,2-Dichloroethylene	100	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
trans-1,3-Dichloropropene ²	0.47	3.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Trichloroethylene	5	5	<1	<1	0.66 J	<1	<1	<1	<1	<1	<1	<1	<1	<25
Trichlorofluoromethane	5200	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<50
Vinyl Chloride	2	0.25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25
Low Molecular Weight Alcohols Analytical Results (ug/L)														
Ethanol	---	---	<200	<100	<200	<200J	<200	<200	<200	<200J	<100	<100	<200J	<200J
Isobutyl Alcohol	5900	---	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Isopropyl Alcohol	410	---	<100	<100	<100	<100J	<100	<100J	<100J	<100J	<100	<100	<100J	<100J
Methanol	20000	---	<200	<200	<200	<200J	<200	<200	<200	<200J	<200	<200	<200J	<200J
n-Butyl Alcohol	2000	---	<100	<100	<100	<100J	<100	<100	<100	<100J	<100	<100	<100J	<100J
n-Propyl Alcohol	---	---	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
sec-Butyl Alcohol	24000	---	<100	<100	<100J	<100	<100	<100	<100	<100J	<100	<100	<100J	<100J
Polycyclic Aromatic Hydrocarbons Analytical Results (ug/L)														
1-Methylnaphthalene	1.1	---	70.7	0.49 J	<1	<1	<1	<1	<1	<1	<1	<1	17.6	1.6
2-Methylnaphthalene	36	---	73.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.5	1.7
Acenaphthene	530	670	0.9 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.63 J	<1
Acenaphthylene	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Anthracene	1800	8300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.41 J
Benz(a)anthracene	0.012	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.47 J
Benz(a)pyrene	0.2	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benz(b)fluoranthene	0.034	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benz(g,h,i)perylene	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benz(k)fluoranthene	0.34	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chrysene	3.4	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	0.0034	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	800	130	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3
Fluorene	290	1100	1.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	<1
Indeno(1,2,3-cd)pyrene	0.034	0.038	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	0.17	---	3.63	0.729	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.06
Phenanthrene	---	---	0.52 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.79 J
Pyrene	120	830	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.2
Volatile Petroleum Hydrocarbons Analytical Results (ug/L)														
C5- C8 Aliphatics	1300	---	37.3 J	26.1 J	9.4 J	9.2 J	<50	9.4 J	27.7 J	14.2 J	17.6 J	16.2 J	61.5	<50
C5- C8 Aliphatics (Unadj.)	1300	---	37.7 J	36.7 J	10.2 J	9.2 J	<50	9.7 J	47.1 J	14.2 J	20.8 J	18.5 J	63.4	9.1 J
C9- C10 Aromatics (Unadj.)	5.5	---	377	50.3 B	31.5 JB	16.2 JB	25.8 JB	16.3 JB	94.7 B	26.7 JB	113 B	111 B	277	73.7 B
C9- C12 Aliphatics	100	---	125	30.3 J	<50	<50J	<50	<50	35.3 J	<50J	50.5	56	76.6 J	729 J
C9- C12 Aliphatics (Unadj.)	100	---	506	115 BJ	53.5 B	9 JB	30.2 JB	17.3 JB	130	17.5 JB	166 B	167 B	358 J	7410 J
Extractable Petroleum Hydrocarbons Analytical Results (ug/L)														
C11-C22 Aromatics	5.5	---	440	55.6 J	<110	<110	<100	<110	75.2 J	<110	194	164	256 B	133 JB
C11-C22 Aromatics (Unadj.)	5.5	---	524	65.4 J	<110	<110	<100	<110	80.1 J	<110	197	167	263	135 JB
C19-C36 Aliphatics	60000	---	<100J	47.9 JB	31.9 JB	62.8 JB	<100J	<110J	29.7 JB	51.7 JB	32.6 JB	44.9 JB	55.6 JB	185 JB
C9-C18 Aliphatics	100	---	30.6 JB	39.5 JB	<110	36 JB	36.8 JB	<110	76 JB	31.4 JB	47.1 JB	120 B	39.6 JB	101 JB
Semivolatile Organic Compounds Analytical Results (ug/L)														
1,1'-Biphenyl	0.83	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4,5-Tetrachlorobenzene	1.7	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
2,3,4,6-Tetrachlorophenol	240	---	<5	<5.1	<5	<5	<5	<5	<5.1	<5	<5J	<5.2	<5.1	<5.1
2,4,5-Trichlorophenol	1200	---	<5	<5.1	<5	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5.1
2,4,6-Trichlorophenol	4.1	14	<5	<5.1	<5	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5.1
2,4-Dichlorophenol	46	77	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2
2,4-Dimethylphenol	360	380	<5	<5.1	<5	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5.1
2,4-Dinitrophenol	39	69	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrotoluene	0.24	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Table 1
Former Tank Farm Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	MW-3 9/16/2016	MW-5 9/2/2016	MW-7 9/16/2016	MW-9 9/23/2016	MW-13 9/16/2016	MW-14 9/14/2016	MW-15 9/14/2016	MW-16 9/22/2016	MW-17 DUP 9/2/2016	MW-17 9/2/2016	MW-18 9/23/2016	MW-19 9/23/2016
2,6-Dinitrotoluene	0.049	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Chloronaphthalene	750	1000	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
2-Chlorophenol	91	81	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
2-Methylphenol	930	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
2-Nitroaniline	190	---	<5	<5.1J	<5	<5J	<5	<5.1J	<5J	<5J	<5.2	<5.1	<5J	<5.1J
2-Nitrophenol	---	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
3&4-Methylphenol ²	930	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
3,3'-Dichlorobenzidine	0.13	0.21	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
3-Nitroaniline	---	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
4,6-Dinitro-o-cresol	1.5	13	<5	<5.1J	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
4-Bromophenyl phenyl ether	---	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
4-Chloro-3-methyl phenol	1400	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
4-Chloroaniline	0.37	---	<5	0.6 J	<5	<5	1.8 J	1.1 J	0.81 J	<5	<5.2J	<5.1J	<5	<5.1
4-Chlorophenyl phenyl ether	---	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
4-Nitroaniline	3.8	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
4-Nitrophenol	---	---	<10	<10	<10	<10	<10	<10	<10J	<10	<10	<10	<10	<10
Acetophenone	1900	---	<2	<2	<2	<2	<2	<2	<2J	<2J	<2	<2.1	<2	5.5
Atrazine	3	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Benzaldehyde	19	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
bis(2-Chloroethoxy)methane	59	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
bis(2-Chloroethyl)ether	0.014	0.3	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
bis(2-Chloroisopropyl)ether	710	1400	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
bis(2-Ethylhexyl)pthalate	6	12	<2	<2	5.3	1.7 J	2.6	<2	2.5	<2	4.4	<2	<2	<2
Butyl benzyl pthalate	16	1500	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Caprolactam	9900	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Carbazole	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibenzofuran	7.9	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
Diethyl pthalate	15000	17000	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Dimethyl pthalate	---	270000	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Di-n-butyl pthalate	900	2000	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Di-n-octyl pthalate	200	---	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
Hexachlorobenzene	1	0.0028	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorocyclopentadiene	50	40	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ispophorone	78	350	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2
N-Nitrosodi-n-propylamine	0.011	0.05	<2	<2	<2	<2	<2	<2	<2J	<2J	<2	<2.1	<2	<2
N-Nitrosodiphenylamine	12	---	<5	<5.1	<5	<5	<5	<5.1	<5	<5	<5.2	<5.1	<5	<5.1
Pentachlorophenol	1	1	<4	<4	<4	<4	<4	<4	<4	<4	<4.1	<4	<4	<4.1
Phenol	5800	10000	<2	<2	<2	<2	<2	<2	<2	<2	<2.1	<2	<2	<2

Notes:

¹ April 2016 Puerto Rico Water Quality Standard Regulation for Class SG groundwater

² RSL is for 1,3-Dichloropropene. The USEPA has not specifically established a tapwater RSL for trans-1,3-Dichloropropene.

³ The Tapwater screening level applied to 3 & 4 methylphenol is the screening level for 3-methylphenol. This is a conservative level; it is lower than the screening level for 4-methylphenol.

-- No MCL, RSL, or PRWQS is available for this compound.

Detected values are shown in bold. Values which exceed the MCL, RSL, or PRWQS are shown shaded.

B - Compound found in associated method blank

J - Indicates an estimated value

JB - Value is estimated due to presence of compound in method blank.

Table 2
Brule Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 DUP 9/13/2016	BR-1 9/13/2016	BR-2 9/13/2016	BR-3 9/14/2016	BR-4 9/14/2016
Volatile Organic Compounds Analytical Results (ug/L)							
1,1,1-Trichloroethane	200	200	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	0.076	1.7	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	5	<1	<1	<1	<1	<1
1,1-Dichloroethane	2.8	---	<1	<1	<1	<1	<1
1,1-Dichloroethylene	7	7	<1J	<1J	<1J	<1J	<1J
1,2,3-Trichlorobenzene	7	---	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	70	35	<2	<2	<2	<2	<2
1,2,4-Trimethylbenzene	15	---	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	0.2	---	<5	<5	<5	<5	<5
1,2-Dibromoethane	0.05	---	<2	<2	<2	<2	<2
1,2-Dichlorobenzene	600	420	0.86 J	0.88 J	0.53 J	<1	<1
1,2-Dichloroethane	5	3.8	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	5	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	---	320	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75	63	0.64 J	<1	<1	<1	<1
1,4-Dioxane	0.46	---	256	299	19	49.5	0.877
2-Butanone (MEK)	5600	---	<5	<5	<5	<5	<5
2-Hexanone	38	---	<10	<10	<10	<10	<10
4-Methyl-2-pentanone (MIBK)	6300	---	<5	<5	<5	<5	<5
Acetone	14000	---	<25	<25	<25	<25	<25
Benzene	5	5	0.29 J	0.31 J	<1	<1	<1
Benzyl Chloride	0.089	---	<2	<2	<2	<2	<2
Bromochloromethane	83	---	<1	<1	<1	<1	<1
Bromodichloromethane	0.13	5.5	<1	<1	<1	<1	<1
Bromoform	3.3	43	<1	<1	<1	<1	<1
Carbon Disulfide	810	---	<2	<2	<2	<2	<2
Carbon Tetrachloride	5	2.3	<1	<1	<1	<1	<1
Chlorobenzene	100	100	1.2	1.3	0.4 J	0.27 J	<1
Chloroethane	21000	---	<2	<2	<2	<2	<2
Chloroform	8	57	<1J	<1J	<1J	<1J	<1J
Chloromethane	190	---	<2	<2	<2	<2	<2
cis-1,2-Dichloroethylene	70	---	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	---	---	<1	<1	<1	<1	<1
Cyclohexane	13000	---	4.3	4.4	0.61 J	<1	<1
Dibromochloromethane	0.87	4	<1	<1	<1	<1	<1
Dichlorodifluoromethane	200	---	<2	<2	<2	<2	<2
Ethylbenzene	700	530	<1J	<1J	<1J	<1J	<1J
Freon 113	55000	---	<1	<1	<1	<1	<1
Hexachlorobutadiene	0.14	4.4	<1.1	<1	<1	<1J	<1J
Hexachloroethane	0.33	14	<2.1	<2.1	<2	<2	<2
Isopropylbenzene	450	---	2.3	2.4	3.8	0.6 J	<1
Methyl Acetate	20000	---	<20	<20	<20	<20	<20
Methyl Bromide	7.5	---	<2	<2	<2	<2	<2
Methyl Tert Butyl Ether	14	---	12.6	12.8	3.2	0.74 J	<1
Methylcyclohexane	---	---	<1	<1	0.53 J	<1	<1
Methylene Chloride	5	46	<5	<5	<5	<5	<5
Nitrobenzene	0.14	17	<2.1	<2.1	<2	<2J	<2J
p-Isopropyltoluene	---	---	<1	<1	<1	<1	<1
Styrene	100	---	<1	<1	<1	<1	<1
Tert-Amyl Alcohol	6.3	---	<20	<20	<20	<20	<20
Tetrachloroethylene	5	5	<1	<1	<1	<1	<1
Tetrahydrofuran	3400	---	<5	<5	<5	<5	<5
Toluene	1000	1000	<1J	<1J	<1J	<1J	<1J
trans-1,2-Dichloroethylene	100	100	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene ²	0.47	3.4	<1	<1	<1	<1	<1
Trichloroethylene	5	5	<1	<1	<1	<1	<1
Trichlorofluoromethane	5200	---	<2	<2	<2	<2	<2
Vinyl Chloride	2	0.25	<1	<1	<1	<1	<1
Xylene (Total)	10000	---	<2	0.35 J	<2	<2	<2

Table 2
Brule Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 DUP 9/13/2016	BR-1 9/13/2016	BR-2 9/13/2016	BR-3 9/14/2016	BR-4 9/14/2016
Low Molecular Weight Alcohols Analytical Results (ug/L)							
Ethanol	---	---	<200	<200	<200	<200	<200
Isobutyl Alcohol	5900	---	<100J	<100	<100	<100	<100
Isopropyl Alcohol	410	---	<100J	<100J	<100J	<100J	<100J
Methanol	20000	---	<200	<200	<200	<200	<200
n-Butyl Alcohol	2000	---	<100	<100	<100	<100	<100
n-Propyl Alcohol	---	---	<100	<100	<100	<100	<100
sec-Butyl Alcohol	24000	---	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons Analytical Results (ug/L)							
1-Methylnaphthalene	1.1	---	<1.1	<1	0.44 J	<1	<1
2-Methylnaphthalene	36	---	<1.1	<1	<1	<1	<1
Acenaphthene	530	670	<1.1	<1	<1	<1	<1
Acenaphthylene	---	---	<1.1	<1	<1	<1	<1
Anthracene	1800	8300	<1.1	<1	<1	<1	<1
Benzo(a)anthracene	0.012	0.038	<1.1	<1	<1	<1	<1
Benzo(a)pyrene	0.2	0.038	<1.1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.034	0.038	<1.1	<1	<1	<1	<1
Benzo(g,h,i)perylene	---	---	<1.1	<1	<1	<1	<1
Benzo(k)fluoranthene	0.34	0.038	<1.1	<1	<1	<1	<1
Chrysene	3.4	0.038	<1.1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	0.0034	0.038	<1.1	<1	<1	<1	<1
Fluoranthene	800	130	<1.1	<1	0.51 J	<1	<1
Fluorene	290	1100	<1.1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene	0.034	0.038	<1.1	<1	<1	<1	<1
Naphthalene	0.17	---	<0.11	<0.1	<0.1	<0.1	<0.1
Phenanthrene	---	---	<1.1	<1	<1	<1	<1
Pyrene	120	830	<1.1	<1	<1	<1	<1
Volatile Petroleum Hydrocarbons Analytical Results (ug/L)							
C5- C8 Aliphatics	1300	---	31.6 J	26 J	16 J	<50	<50
C5- C8 Aliphatics (Unadj.)	1300	---	46.3 J	40.4 J	19.9 J	9.8 J	<50
C9- C10 Aromatics (Unadj.)	5.5	---	28.5 JB	30.7 JB	74 B	16.8 JB	14.2 JB
C9- C12 Aliphatics	100	---	<50	8.2 J	26.9 J	<50	<50
C9- C12 Aliphatics (Unadj.)	100	---	36.1 JB	39.9 JB	102 B	13.4 JB	9.5 JB
Extractable Petroleum Hydrocarbons Analytical Results (ug/L)							
C11-C22 Aromatics	5.5	---	72.4 J	55.6 J	73.6 J	<100	37.5 J
C11-C22 Aromatics (Unadj.)	5.5	---	72.4 J	55.6 J	74.2 J	<100	37.5 J
C19-C36 Aliphatics	60000	---	<100	<110	29.4 JB	<100J	65.7 JB
C9-C18 Aliphatics	100	---	17.8 JB	20.2 JB	<110	<100	30.8 JB
Semivolatile Organic Compounds Analytical Results (ug/L)							
1,1'-Biphenyl	0.83	---	<1.1	<1	<1	<1	<1
1,2,4,5-Tetrachlorobenzene	1.7	---	<2.1	<2.1	<2	<2	<2
2,3,4,6-Tetrachlorophenol	240	---	<5.3	<5.1	<5.1	<5	<5.1
2,4,5-Trichlorophenol	1200	---	<5.3	<5.1	<5.1	<5	<5.1
2,4,6-Trichlorophenol	4.1	14	<5.3	<5.1	<5.1	<5	<5.1
2,4-Dichlorophenol	46	77	<2.1	<2.1	<2	<2	<2
2,4-Dimethylphenol	360	380	<5.3	<5.1	<5.1	<5	<5.1
2,4-Dinitrophenol	39	69	<11	<10	<10	<10	<10
2,4-Dinitrotoluene	0.24	1.1	<1.1	<1	<1	<1	<1
2,6-Dinitrotoluene	0.049	---	<1.1	<1	<1	<1	<1
2-Chloronaphthalene	750	1000	<2.1	<2.1	<2	<2	<2
2-Chlorophenol	91	81	<5.3	<5.1	<5.1	<5	<5.1
2-Methylphenol	930	---	<2.1	<2.1	<2	<2	<2
2-Nitroaniline	190	---	<5.3J	<5.1J	<5.1	<5J	<5.1J
2-Nitrophenol	---	---	<5.3	<5.1	<5.1	<5	<5.1
3&4-Methylphenol ³	930	---	<2.1	<2.1	<2	<2	<2
3,3'-Dichlorobenzidine	0.13	0.21	<2.1	<2.1	<2	<2	<2
3-Nitroaniline	---	---	<5.3	<5.1	<5.1	<5	<5.1
4,6-Dinitro-o-cresol	1.5	13	<5.3	<5.1	<5.1	<5	<5.1
4-Bromophenyl phenyl ether	---	---	<2.1	<2.1	<2	<2	<2
4-Chloro-3-methyl phenol	1400	---	<5.3	<5.1	<5.1	<5	<5.1
4-Chloroaniline	0.37	---	1 J	1.2 J	<5.1	<5	<5.1
4-Chlorophenyl phenyl ether	---	---	<2.1	<2.1	<2	<2	<2
4-Nitroaniline	3.8	---	<5.3	<5.1	<5.1	<5	<5.1

Table 2
Brule Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 DUP 9/13/2016	BR-1 9/13/2016	BR-2 9/13/2016	BR-3 9/14/2016	BR-4 9/14/2016
4-Nitrophenol	---	---	<11	<10	<10	<10J	<10J
Acetophenone	1900	---	<2.1	<2.1	<2	<2J	<2J
Atrazine	3	---	<2.1	<2.1	<2	<2	<2
Benzaldehyde	19	---	<5.3	<5.1	<5.1	<5	<5.1
bis(2-Chloroethoxy)methane	59	---	<2.1	<2.1	<2	<2	<2
bis(2-Chloroethyl)ether	0.014	0.3	<2.1	<2.1	<2	<2	<2
bis(2-Chloroisopropyl)ether	710	1400	<2.1	<2.1	<2	<2	<2
bis(2-Ethylhexyl)phthalate	6	12	<2.1	<2.1	<2	2.5	<2
Butyl benzyl phthalate	16	1500	<2.1	<2.1	<2	<2	<2
Caprolactam	9900	---	<2.1	<2.1	<2	<2	<2
Carbazole	---	---	<1.1	<1	<1	<1	<1
Dibenzofuran	7.9	---	<5.3	<5.1	<5.1	<5	<5.1
Diethyl phthalate	15000	17000	<2.1	<2.1	<2	<2	<2
Dimethyl phthalate	---	270000	<2.1	<2.1	<2	<2	<2
Di-n-butyl phthalate	900	2000	<2.1	<2.1	<2	<2	<2
Di-n-octyl phthalate	200	---	<2.1	<2.1	<2	<2	<2
Hexachlorobenzene	1	0.0028	<1.1	<1	<1	<1	<1
Hexachlorocyclopentadiene	50	40	<11	<10	<10	<10	<10
Isophorone	78	350	<2.1	<2.1	<2	<2	<2
N-Nitroso-di-n-propylamine	0.011	0.05	<2.1J	<2.1J	<2	<2J	<2J
N-Nitrosodiphenylamine	12	---	<5.3	<5.1	<5.1	<5	<5.1
Pentachlorophenol	1	1	<4.2	<4.1	<4	<4	<4
Phenol	5800	10000	<2.1	<2.1	<2	<2	<2

Notes:

¹ April 2016 Puerto Rico Water Quality Standards Regulation for Class SG groundwater

² RSL is for 1,3-Dichloropropene. The USEPA has not specifically established a tapwater RSL for trans-1,3-Dichloropropene.

³ The Tapwater screening level applied to 3 & 4 methylphenol is the screening level for 3-methylphenol. This is a conservative level; it is lower than the screening level for 4-methylphenol.

--- No MCL, RSL, or PRWQS is available for this compound.

Detected values are shown in bold. Values which exceed the MCL, RSL, or PRWQS are shown shaded.

J - Indicates an estimated value

JB - Value is estimated due to presence of compound in method blank.

R - Sample result is not usable because it did not meet required quality assurance/quality control limits.

Table 3
Ring 5 Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	A-1R4 9/12/2016	A-2R2 9/12/2016	D-1R 9/19/2016	E-1R 9/19/2016	G-1R3 9/19/2016	MW-11 9/22/2016	S-28 9/12/2016	S-29R 9/6/2016	S-30 9/6/2016	S-31R2 9/6/2016	S-32 9/9/2016	S-33 9/7/2016	S-34 9/7/2016	S-35 9/9/2016	S-35D 9/9/2016	S-36 9/7/2016	S-37 9/7/2016	S-38 9/12/2016	S-39D 9/15/2016	S-39S 9/15/2016	UP-1 9/5/2016	UP-2 DUP 9/5/2016	UP-2 9/5/2016	
Building 5 Area COC Analytical Results (ug/L)																										
Benzene	5	5	4.2	<1	<1	0.59 J	<200	<1	<1	0.25 J	2.1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
Ethylbenzene	700	530	1910 J	<1J	<1	<1	18300	<1	<1J	<1	1630	36800	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2360	0.27 J	<1	<1
Toluene	1000	1000	23.8 J	<1J	<1	<1	88 J	<1	<1J	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
m,p-Xylene		---	7540	<2	<2	<2	69800	<2	<2	0.32 J	<2	0.92 J	57600	<2	<2	<2	<2	<2	<2	<2	<2	<2	7120	0.57 J	<2	<2
o-Xylene	190	---	430	<1	<1	<1	2940	<1	<1	<1	2590	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	507	<1	<1	<1
Xylene (Total)	10000		7970	<2	<2	<2	72740	<2	<2	0.32 J	<2	0.92 J	60190	<2	<2	<2	<2	<2	<2	<2	<2	<2	7627	0.57 J	<2	<2
Acetone	14000	---	<25	<25	<25	<5000J	<25	<25	<25J	<25J	<25000	<25J	<25J	<25	<25	<25J	<25J	<25	<25J	<25	<25	<1300	<25J	<25J	<25J	
4-Methyl-2-pentanone (MIBK)	6300	---	15.1	<5	<5	<1000	<5	<5	<5	<5	<5000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Isopropyl Alcohol	410	---	<100J	<100J	<100J	<100J	<100J	<100J	<100J	<100	<100	<100J	<100J	<100	<100J	<100J	<100	<100J	<100	<100J	<100	<100	<100	<100	<100	
Methanol	20000	---	<200	<200	<200	<200	<200	<200J	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	
Other Volatile Organic Compounds Analytical Results (ug/L)																										
1,1,1-Trichloroethane	200	200	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,1,2,2-Tetrachloroethane	0.076	1.7	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,1,2-Trichloroethane	5	5	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,1-Dichloroethane	2.8	---	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,1-Dichloroethylene	7	7	<1J	<1J	<1	<1	<200	<1	<1J	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,2,3-Trichlorobenzene	7	---	<2	<2	<2	<2	<400	<2	<2	<2	<2000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<100	<2	<2	<2
1,2,4-Trichlorobenzene	70	35	<2	<2	<2	<2	<400	<2	<2	<2	<2000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<100	<2	<2	<2
1,2,4-Trimethylbenzene	15	---	0.82 J	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,2-Dibromo-3-chloropropane	0.2	---	<5	<5	<5	<5	<1000	<5	<5	<5	<5000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<250	<5	<5	<5
1,2-Dibromoethane	0.05	---	<2	<2	<2	<2	<400	<2	<2	<2	<2000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<100	<2	<2	<2
1,2-Dichloroethane	600	420	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,2-Dichloroethane	5	3.8	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,2-Dichloropropane	5	5	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,3-Dichlorobenzene	---	320	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,4-Dichlorobenzene	75	63	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
1,4-Dioxane	0.46	---	54.6	<0.1	1660	46.1	0.425	245	278	10.6	1330	23	4.23	18.2	12.6	372	26	3.23	19.7	2470	81.6	39.6	2.41	278	328	
2-Butanone (MEK)	5600	---	<5	<5	<5	<5	<1000	<5	<5	<5	<5000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<250	<5	<5	<5
2-Hexanone	38	---	<10	<10	<10	<10	<2000	<10	<10	<10	<10000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<500	<10	<10	<10
Benzyl Chloride	0.089	---	<2	<2	<2	<2	<400	<2	<2	<2	<2000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<100	<2	<2	<2
Bromochloromethane	83	---	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
Bromodichloromethane	0.13	5.5	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
Bromoform	3.3	43	<1	<1	<1	<1	<200	<1	<1	<1	<1000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1	<1	<1
Carbon Disulfide	810	---	<2	<2	<2	<2	<400	<2	<2	<2	<2000</															

Table 3
Building 5 Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	A-1R4 9/12/2016	A-2R2 9/12/2016	D-1R 9/19/2016	E-1R 9/19/2016	G-1R3 9/19/2016	MW-11 9/22/2016	S-28 9/12/2016	S-29R 9/6/2016	S-30 9/6/2016	S-31R2 9/6/2016	S-32 9/9/2016	S-33 9/7/2016	S-34 9/7/2016	S-35 9/9/2016	S-35D 9/9/2016	S-36 9/7/2016	S-37 9/7/2016	S-38 9/12/2016	S-39D 9/15/2016	S-39S 9/15/2016	UP-1 9/5/2016	UP-2 DUP 9/5/2016	UP-2 9/5/2016
<i>Polycyclic Aromatic Hydrocarbons Analytical Results (ug/L)</i>																									
1-Methylnaphthalene	1.1	---	0.42 J	<1	<1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
2-Methylnaphthalene	36	---	0.6 J	<1	<1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Acenaphthene	530	670	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Acenaphthylene	---	---	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Anthracene	1800	8300	28.7	<1	0.69 J	50.6	<1.1	<1.1	<1	19.3	<1.1	3.8	0.53 J	1.4	<1	<1	<1	<1	<1	<1.1	3.5	2	<1	<1.1	
Benz(a)anthracene	0.012	0.038	<1	<1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Benz(a)pyrene	0.2	0.038	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Benz(b)fluoranthene	0.034	0.038	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Benz(g,h,i)perylene	---	---	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Benz(k)fluoranthene	0.34	0.038	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Chrysene	3.4	0.038	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Dibenzo(a,h)anthracene	0.0034	0.038	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Fluoranthene	800	130	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Fluorene	290	1100	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Indeno(1,2,3-cd)pyrene	0.034	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Naphthalene	0.17	---	0.663	<0.1	<0.11	<0.11	<0.11	<0.1	<0.1	<0.11	<0.1	0.364	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.11	<0.1	<0.11	<0.1	<0.11	
Phenanthrene	---	---	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
Pyrene	120	830	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1.1	<1	<1.1	<1	<1	<1	<1	<1	<1	<1	<1.1	<1	<1.1	<1	<1.1	
<i>Volatile Petroleum Hydrocarbons Analytical Results (ug/L)</i>																									
C5-C8 Aliphatics	1300	---	818	10.7 J	34.2 J	17.8 J	63.7	12.3 J	17.2 J	18.4 J	25 J	20.4 J	78.6	18.7 J	9.9 J	18.9 J	13.1 J	<50	10.7 J	57.2	12.5 J	19.1 J	11.8 J	13.2 J	11.7 J
C5-C8 Aliphatics (Unadj.)	1300	---	847	10.7 J	38 J	25.2 J	155	14.9 J	19.6 J	19 J	29.7 J	32.4 J	135	27.6 J	15.7 J	21.6 J	13.5 J	<50	11.8 J	61.8	12.7 J	23.3 J	11.8 J	16.2 J	14.6 J
C9-C10 Aromatics (Unadj.)	5.5	---	77.1 B	12 JB	30.9 JB	30.2 JB	125 B	14.6 JB	18.3 JB	41.9 JB	26.7 JB	67.1 B	305	64.6 B	25.7 JB	14.7 JB	14.2 JB	27.5 JB	26.5 JB	21.9 JB	12.1 JB	35 JB	55.2 B	34.4 JB	30.5 JB
C9-C12 Aliphatics	100	---	462	<50	<50	<50	14100	<50J	<50	10.6 J	<50	61.3	4780	28.9 J	<50	<50	<50	<50	<50	<50	1470	21.8 J	<50	<50	
C9-C12 Aliphatics (Unadj.)	100	---	7610	10 JB	34.9 JB	35.1 JB	74600	8.6 JB	11 JB	53.1 B	31.9 JB	1510	92000	94.5 B	33 JB	9.3 JB	9.4 JB	28.7 JB	26.3 JB	29.7 JB	8.2 JB	7830	77.9 B	37.7 JB	33.6 JB
<i>Extractable Petroleum Hydrocarbons Analytical Results (ug/L)</i>																									
C11-C22 Aromatics	5.5	---	34.9 J	50.4 J	32.8 J	33.5 J	58.3 J	43.2 J	<110	109 </td															

Table 3
Building 5 Area Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	A-1R4 9/12/2016	A-2R2 9/12/2016	D-1R 9/19/2016	E-1R 9/19/2016	G-1R3 9/19/2016	MW-11 9/22/2016	S-28 9/12/2016	S-29R 9/6/2016	S-30 9/6/2016	S-31R2 9/6/2016	S-32 9/9/2016	S-33 9/7/2016	S-34 9/7/2016	S-35 9/9/2016	S-35D 9/9/2016	S-36 9/7/2016	S-37 9/7/2016	S-38 9/12/2016	S-39D 9/15/2016	S-39S 9/15/2016	UP-1 9/5/2016	UP-2 DUP 9/5/2016	UP-2 9/5/2016
Hexachlorocyclopentadiene	50	40	<10	<10	<10	<11	<11	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<11	<10	<11	<10	<11
Isophorone	78	350	<2	<2	<2.1	<2.2	<2.1	<2.2	<2.1	<2.1	<2	<2.1	<2.2	<2	<2	<2	<2	<2	<2	<2	<2.2	<2.1	<2.1	<2	<2.1
N-Nitroso-di-n-propylamine	0.011	0.05	<2J	<2J	<2.1	<2.2	<2.2	<2.1	<2.1J	<2	<2.1	<2.1	<2.2	<2	<2	<2	<2	<2	<2	<2	<2.2J	<2.1	<2.1	<2	<2.1
N-Nitrosodiphenylamine	12	---	<5.1	<5.1	0.53 J	<5.4	<5.5	<5.3	<5.1	<5.3	<5.2	<5.6	<5	<5	<5.1	<5	<5	<5.1	<5.6	<5.1	<5.3	<5.1	<5.3	<5.3	<5.3
Pentachlorophenol	1	1	<4.1	<4	<4.2	<4.3	<4.4	<4.2	<4.1	<4.1	<4.2	<4.4J	<4	<4	<4J	<4	<4	<4	<4J	<4.4	<4.1	<4.3	<4	<4.2	
Phenol	5800	10000	<2	<2	<2.1	<2.2	<2.1	<2.1	<2.1	<2	<2.1	<2.1	<2.2	<2	<2	<2	<2	<2	<2	<2	<2.2	<2.1	<2.1	<2	<2.1
<i>Organochlorine Pesticides Analytical Results (ug/L)</i>																									
4,4'-DDD	0.032	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	0.021	<0.005	<0.005	<0.005	<0.005	<0.005
4,4'-DDE	0.046	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	0.021	<0.012	<0.012	0.0083	<0.005	<0.005	<0.005	<0.005
4,4'-DDT	0.23	0.0022	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.021	<0.005	<0.005	<0.005	<0.005
Aldrin	0.00092	0.00049	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	<0.0051	<0.005	<0.005	<0.005	<0.005
alpha-BHC	0.0072	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05J	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	<0.0051	<0.005	<0.005	<0.005	<0.005
alpha-Chlordane ⁴	2	0.008	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.0059	<0.005	<0.005	<0.005	<0.005
beta-BHC	0.025	0.091	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.0052	<0.005	<0.005	<0.005	<0.005
delta-BHC	---	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.0093	<0.005	<0.005	<0.005	<0.005
Dieldrin	0.0018	0.00052	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	0.013	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan sulfate ⁵	100	62	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05J	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.03	<0.005	<0.005	<0.005	<0.005
Endosulfan-I ⁶	100	62	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05J	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.0045 J	<0.005	<0.005	<0.005	<0.005
Endosulfan-II ⁶	100	62	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.027	<0.005	<0.005	<0.005	<0.005
Endrin	2	0.059	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.018	<0.005	<0.005	<0.005	<0.005
Endrin aldehyde	---	0.29	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.03	<0.005	<0.005	<0.005	<0.005
Endrin ketone	---	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.027	<0.005	<0.005	<0.005	<0.005
gamma-BHC (Lindane)	0.2	---	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05J	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.012	<0.012	0.0051	<0.005	<0.005	<0.005	<0.005
gamma-Chlordane ⁴	2	0.008	<0.01	<0.01	<0.01	<0.01	<0.011	<0.011	<0.01	<0.01	<0.011	<0.05	<0.01	<0.01	<0.01	<0.01	NA								

Table 4
Release Assessment Phase 1 Groundwater Analytical Results

Parameter	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	MW-20D 9/21/2016	MW-20S 9/21/2016	MW-21S 9/23/2016	MW-22S 9/22/2016	MW-23S 9/22/2016	RA-10D 9/15/2016	RA-10S 9/15/2016	S-40D 9/8/2016	S-40S 9/8/2016	S-41D 9/8/2016	S-41S 9/8/2016	S-42D 9/20/2016	S-42S 9/20/2016	S-43D 9/20/2016	S-43S 9/20/2016
<i>Volatile Organic Compounds Analytical Results (ug/L)</i>																	
1,1,1-Trichloroethane	200	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethane	0.076	1.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2-Trichloroethane	5	5	<1	<1	<1	0.44 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethylene	2.8	---	<1	<1	0.97 J	<1	<1	<1J	<1	<1	<1	<1	<1	<1	<1	<1	
1,2,3-Trichlorobenzene	7	7	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,2,4-Trichlorobenzene	70	35	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,2,4-Trimethylbenzene	15	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-chloropropane	0.2	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
1,2-Dibromoethane	0.05	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,2-Dichlorobenzene	600	420	<1	<1	0.78 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloroethane	5	3.8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloropropane	5	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,3-Dichlorobenzene	---	320	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,4-Dichlorobenzene	75	63	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,4-Dioxane	0.46	---	10.2	2.13	0.756	0.123	0.342	3090	1430	4.82	12.6	1.71	0.921	3130	3680	4270	5060
2-Butanone (MEK)	5600	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
2-Hexanone	38	---	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
4-Methyl-2-pentanone (MIBK)	6300	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Acetone	14000	---	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
Benzene	5	5	<1	<1	<1	<1	<1	0.34 J	<1	<1	<1	<1	<1	<1	0.46 J	0.63 J	
Benzyl Chloride	0.089	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Bromochloromethane	83	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	0.13	5.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromoform	3.3	43	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Carbon Disulfide	810	---	0.34 J	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Carbon Tetrachloride	5	2.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Chlorobenzene	100	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.28 J	0.27 J	6.9	11.3
Chloroethane	21000	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Chloroform	8	57	<1	<1	<1	<1	<1	<1J	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	190	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
cis-1,2-Dichloroethylene	70	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.33 J	
cis-1,3-Dichloropropene	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Cyclohexane	13000	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.7 J	<1	6	5.5
Dibromochloromethane	0.87	4	<1	<1	<1	<1	<1	<1	<1J	<1	<1	<1	<1	<1	<1	<1	
Dichlorodifluoromethane	200	---	<2	<2	0.86 J	<2	<2	<2	<2	<2	<2	<2	<2	1.9 J	2.4	<2	
Ethylbenzene	700	530	<1	<1	<1	<1	<1	<1J	<1	<1	<1	<1	<1	<1	<1	<1	
Freon 113	55000	---	<1	<1	12.5	<1	<1	<1	<1	<1	<1	<1	<1	13.1	10.2	3.3	
Hexachlorobutadiene	0.14	4.4	<1	<1	<1	<1.1	<1.1	<1J	<1J	<1	<1	<1	<1	<1	<1	<1	
Hexachloroethane	0.33	14	<2	<2	<2	<2.1	<2.1	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Isopropylbenzene	450	---	<1	<1	<1	<1	<1	10.9	<1	<1	<1	<1	<1	<1	<1	6.8	9.3
Methyl Acetate	20000	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
Methyl Bromide	7.5	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Methyl Tert Butyl Ether	14	---	13.4	3.9	<1	<1	5.3	3.8	<1	0.24 J	<1	<1	1.1	1.6	11.6	9.8	
Methylcyclohexane	---	---	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Methylene Chloride	5	46	<5	<5	<5	<5	<5	<5	<5J	<5	<5	<5	<5	<5	<5	<5	
Nitrobenzene	0.14	17	<2	<2	<2	<2.1	<2.1	<2J	<2	<2	<2</						

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Low Molecular Weight Alcohols Analytical Results (ug/L)																	
Ethanol	---	---	<200	<200	<200J	<200J	<200J	<200	<200	<200	<200	<200	<200	<200	<200	<200	
Isobutyl Alcohol	5900	---	<100	<100	<100	<100	<100	<100J	<100	<100	<100J	<100J	<100	<100	<100	<100	
Isopropyl Alcohol	410	---	<100	<100	<100J	<100J	<100J	<100J	<100	<100	<100J	<100J	<100J	<100J	<100	<100	
Methanol	20000	---	<200	<200	<200J	<200J	<200J	<200	<200	<200	<200	<200	<200	<200	<200	<200	
n-Butyl Alcohol	2000	---	<100	<100	<100J	<100J	<100J	<100	<100	<100	<100	<100J	<100J	<100J	<100	<100	
n-Propyl Alcohol	---	---	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
sec-Butyl Alcohol	24000	---	<100	<100	<100J	<100J	<100J	<100	<100	<100	<100	<100	<100	<100	<100	<100	
Polycyclic Aromatic Hydrocarbons Analytical Results (ug/L)																	
1-Methylnaphthalene	1.1	---	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
2-Methylnaphthalene	36	---	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Acenaphthene	530	670	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Acenaphthylene	---	---	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Anthracene	1800	8300	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	1	1.4	
Benzo(a)anthracene	0.012	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Benzo(a)pyrene	0.2	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Benzo(b)fluoranthene	0.034	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Benzo(g,h,i)perylene	---	---	<1	<1	<1	<1.1	<1.1	<1	<1J	<1	<1	<1.1	<1	<1	<1	<1	
Benzo(k)fluoranthene	0.34	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Chrysene	3.4	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Dibenzo(a,h)anthracene	0.0034	0.038	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Fluoranthene	800	130	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Fluorene	290	1100	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Indeno(1,2,3-cd)pyrene	0.034	0.038	<1	<1	<1	<1.1	<1.1	<1	<1J	<1	<1	<1.1	<1	<1	<1	<1	
Naphthalene	0.17	---	<0.1	<0.1	<0.1	<0.11	<0.11	<0.1	<0.1	<0.1	<0.1	<0.11	<0.1	<0.1	<0.1	<0.1	
Phenanthrene	---	---	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Pyrene	120	830	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
Volatile Petroleum Hydrocarbons Analytical Results (ug/L)																	
C5- C8 Aliphatics	1300	---	11.4 J	<50J	<50	8.9 J	<50	72.6	25.3 J	<50	9.5 J	11.9 J	9.6 J	47.9 J	49.4 J	70.1 J	68.5 J
C5- C8 Aliphatics (Unadj.)	1300	---	22.9 J	<50J	<50	8.9 J	<50	79.2	29.5 J	<50	9.5 J	12.4 J	9.6 J	48.9 J	50.8 J	81.8 J	78.9 J
C9- C10 Aromatics (Unadj.)	5.5	---	29.3 JB	25.8 JB	16.9 JB	16.6 JB	14.3 JB	51 B	28.7 JB	23.9 JB	26.9 JB	15 JB	13.9 JB	21.5 JB	28.8 JB	43.5 JB	46.5 JB
C9- C12 Aliphatics	100	---	<50	<50	<50J	<50J	<50J	22.7 J	<50	<50	<50	<50	<50	8.8 J	<50	18.6 J	29.2 J
C9- C12 Aliphatics (Unadj.)	100	---	30.1 JB	30.6 JB	10.1 JB	8.3 JB	8.8 JB	75.7 B	70.8 B	23.2 JB	25.5 JB	9.3 JB	9.8 JB	30.3 JB	33.5 JB	63.8 B	77 B
Extractable Petroleum Hydrocarbons Analytical Results (ug/L)																	
C11-C22 Aromatics	5.5	---	72.6 JB	35.3 JB	122 JB	37.5 JB	37.7 JB	42 J	<110	<100	34.6 JB	44.5 J	36.4 J	40.7 J	<110	35.1 JB	39.1 JB
C11-C22 Aromatics (Unadj.)	5.5	---	72.6 JB	35.3 JB	122 JB	37.5 JB	37.7 JB	42.7 J	<110	<100	34.6 JB	44.5 J	36.4 J	40.7 J	<110	35.1 JB	39.5 JB
C19-C36 Aliphatics	60000	---	39.4 JB	45.8 JB	136 JB	87 JB	51.3 JB	29 JB	<110J	43.5 JB	45.9 JB	45.2 JB	42.3 JB	39.8 JB	29.4 JB	46 JB	49 JB
C9-C18 Aliphatics	100	---	22.3 JB	29 JB	79.6 JB	54.3 JB	30.3 JB	<110	<110	28.9 JB	30 JB	40.7 JB	40.9 JB	22.6 JB	<110	27 JB	23 JB
Semivolatile Organic Compounds Analytical Results (ug/L)																	
1,1'-Biphenyl	0.83	---	<1	<1	<1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1	
1,2,4,5-Tetrachlorobenzene	1.7	---	<2	<2	<2	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2	
2,3,4,6-Tetrachlorophenol	240	---	<5	<5	<5	<5.3J	<5.3J	<5.1	<5.1	<5.1	<5.1	<5.6	<5	<5.1	<5	<5</td	

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4-Nitroaniline	3.8	---	<5	<5	<5	<5.3	<5.3	<5.1	<5.1	<5.1	<5	<5.1	<5.6	<5	<5.1	<5	<5
4-Nitrophenol	---	---	<10	<10	<10	<11	<11	<10J	<10	<10	<10	<10J	<11J	<10	<10	<10	<10
Acetophenone	1900	---	<2	<2	<2	<2.1	<2.1	<2J	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
Atrazine	3	---	<2	<2	<2	<2.1	<2.1	<2	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
Benzaldehyde	19	---	<5	<5	<5	<5.3	<5.3	<5.1	<5.1	<5.1	<5	<5.1	<5.6	<5	<5.1	<5	<5
bis(2-Chloroethoxy)methane	59	---	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
bis(2-Chloroethyl)ether	0.014	0.3	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
bis(2-Chloroisopropyl)ether	710	1400	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
bis(2-Ethylhexyl)phthalate	6	12	<2J	<2J	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2J	<2J	<2J	<2J
Butyl benzyl phthalate	16	1500	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
Caprolactam	9900	---	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	10.8	<2
Carbazole	---	---	<1	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1
Dibenzofuran	7.9	---	<5	<5	<5	<5.3	<5.3	<5.1	<5.1	<5.1	<5	<5.1	<5.6	<5	<5.1	<5	<5
Diethyl phthalate	15000	17000	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2J	<2J	<2	<2	<2
Dimethyl phthalate	---	270000	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
Di-n-butyl phthalate	900	2000	<2J	<2J	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2J	<2J	<2	<2J	<2J
Di-n-octyl phthalate	200	---	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2J	<2J	<2	<2	<2
Hexachlorobenzene	1	0.0028	<1	<1	<1	<1.1	<1.1	<1.1	<1	<1	<1	<1	<1.1	<1	<1	<1	<1
Hexachlorocyclopentadiene	50	40	<10	<10	<10	<10	<11	<11	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isophorone	78	350	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
N-Nitroso-di-n-propylamine	0.011	0.05	<2	<2	<2	<2.1	<2.1	<2.1	<2J	<2	<2	<2	<2.2	<2	<2	<2	<2
N-Nitrosodiphenylamine	12	---	<5	<5	<5	<5.3	<5.3	<5.1	<5.1	<5.1	<5	<5.1	<5.6	<5	<5.1	<5	<5
Pentachlorophenol	1	1	<4	<4	<4	<4.3	<4.3	<4.2	<4.1	<4.1	<4.1	<4	<4J	<4	<4	<4	<4
Phenol	5800	10000	<2	<2	<2	<2.1	<2.1	<2.1	<2	<2	<2	<2	<2.2	<2	<2	<2	<2
Organochlorine Pesticides Analytical Results (ug/L)																	
4,4'-DDD	0.032	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDE	0.046	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDT	0.23	0.0022	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	0.00092	0.00049	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-BHC	0.0072	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-Chlordane ⁴	2	0.008	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
beta-BHC	0.025	0.091	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
delta-BHC	---	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	0.0018	0.00052	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan Sulfate ⁵	100	62	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan- ⁶	100	62	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan-II ⁶	100	62	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	2	0.059	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin Aldehyde	---	0.29	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin Ketone	---	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-BHC (Lindane)	0.2	---	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-Chlordane ⁴	2	0.008	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	0.4	0.00079	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	0.2	0.00039	<0.01	<0.01	<0.011	<0.011	<0.011	<0.01	<0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	40	40	<0.02	<0.021	<0.022	<0.021	<0.022	<0.021	<0.021	<0.021	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toxaphene	3	0.0028	<0.25	<0.26	<0.27	<0.27	<0.27	<0.27	<0.27	<0.26	<0.27	<0.25	<0.25	<0.26	<0.25	<0.26	<0.26

Notes

¹ April 2016 Puerto Rico Water Quality Standards Regulation for Class SG groundwater

² RSL is for 1,3-Dichloropropene. The USEPA has not specifically established a tapwater RSL for trans-1,3-Dichloropropene.

³The Tanwater screening level applied to 3 & 4 methylphenol is the screening level for 3-methylphenol.

⁴ USEPA screening level and PRB90s is for Chlordane. The USEPA and PFOB has not specifically established a screening level for alpha-Chlordane or gamma-Chlordane.

⁵ USEPA screening level and PRVQCs is for Chlordane. The USEPA and PREC has not specifically established a screening level for Endosulfan Sulfate.

⁶ USEPA screening level is for Endosulfan. USEPA has not specifically established a screening level for Endosulfan Sulfate.

^b USEPA screening level and PRWQS is for Endosulfan. USEPA and PREQB has not specifically established a screening level for Endosulfan-I and Endosulfan-II.

--- No MCL, RSL, or PRWQS is available for this compound

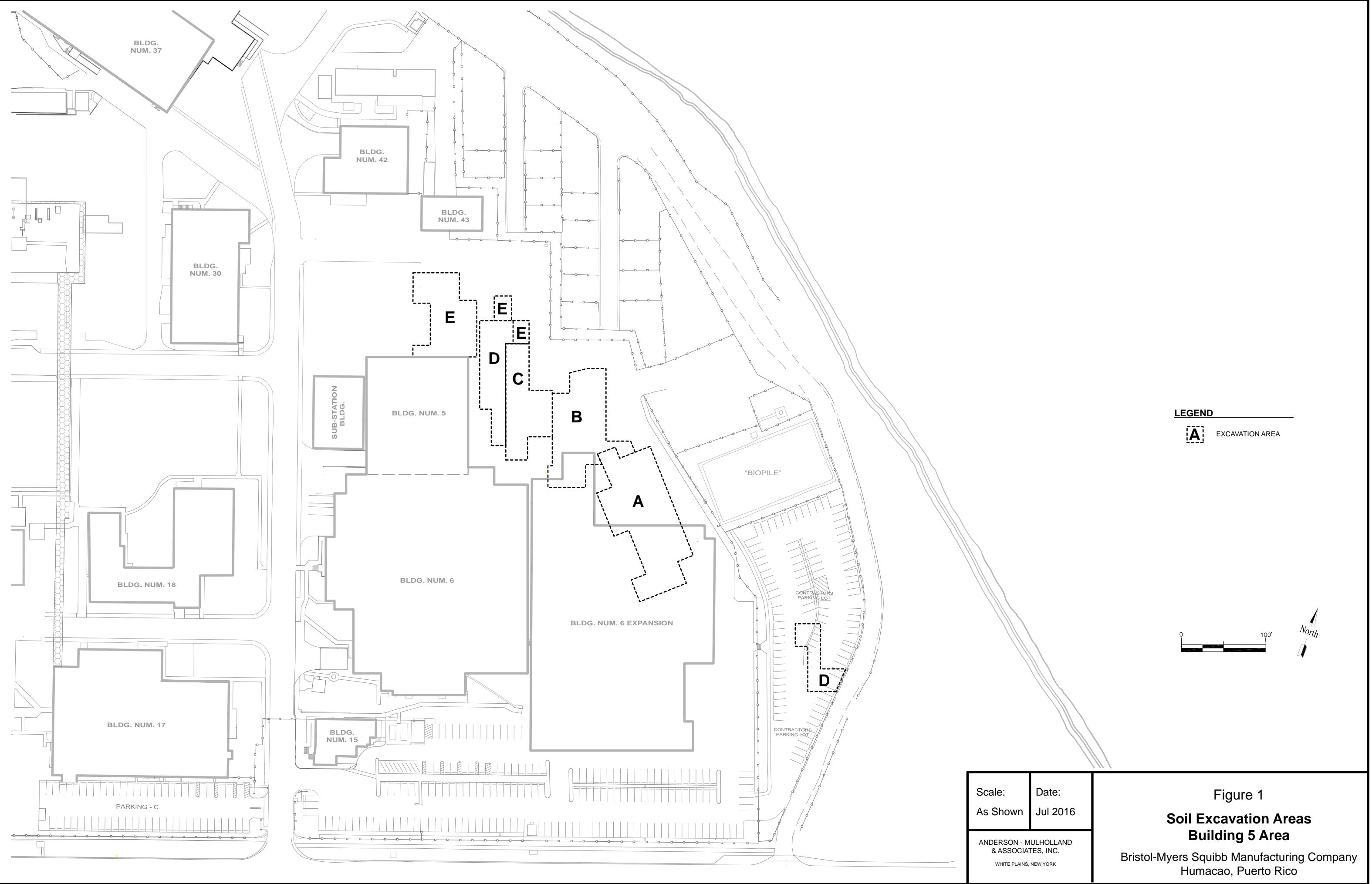
Detected values are shown in bold. Values which exceed the MCL, RSL, or PRWQS are shown shaded.

B - Compound found in associated method blank

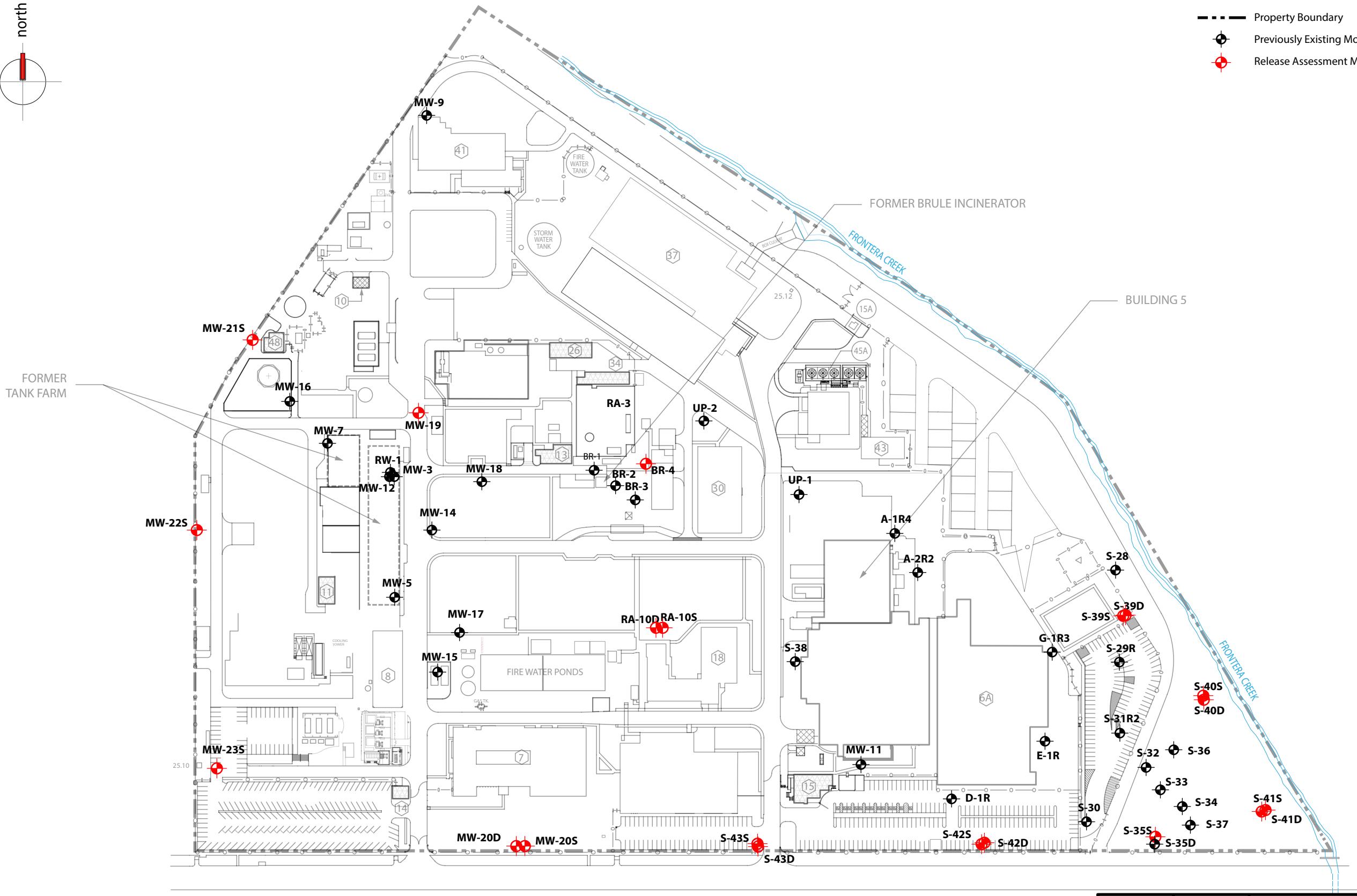
J - Indicates an estimated value

JB - Value is estimated due to presence of compound in method blank.

Figures



north



0 100 200 300 400 500
SCALE IN FEET

LEGEND

- - - Property Boundary
- Previously Existing Monitoring Well Location
- Release Assessment Monitoring Well Location

Scale:
As Shown

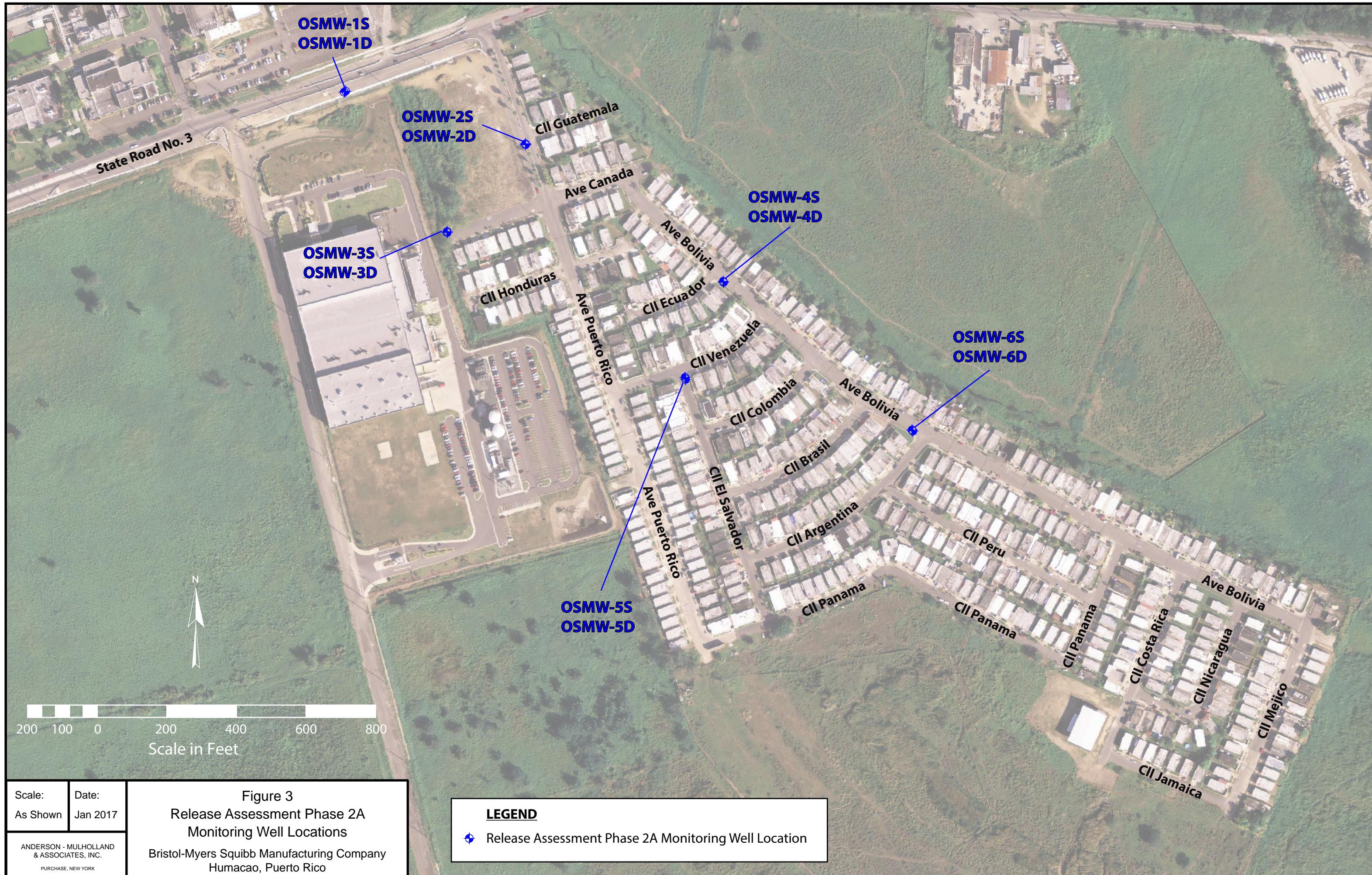
Date:
Jan 2017

ANDERSON - MULHOLLAND
& ASSOCIATES, INC.
PURCHASE, NEW YORK

Figure 2

Release Assessment Phase 1
Monitoring Well Locations

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico



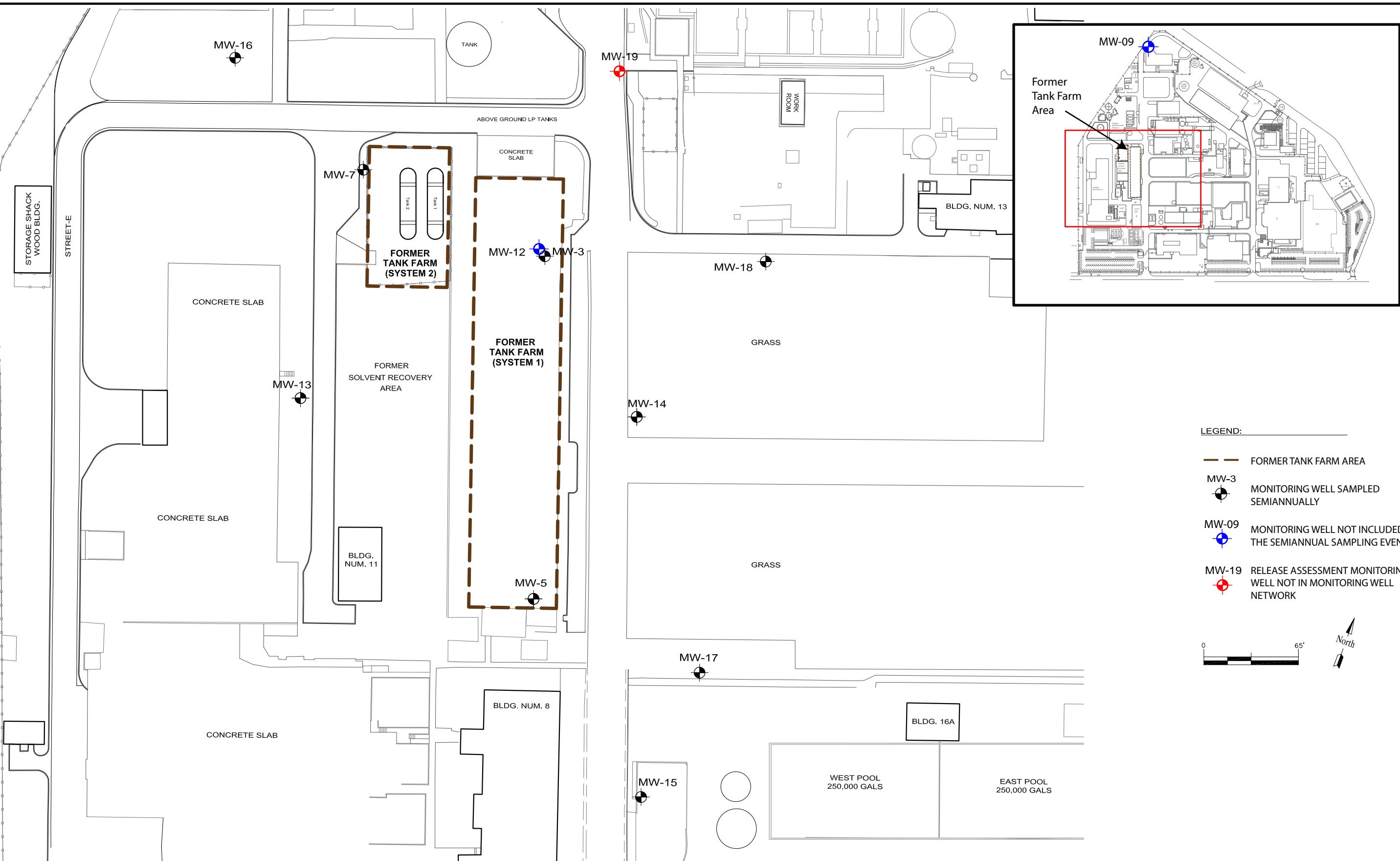
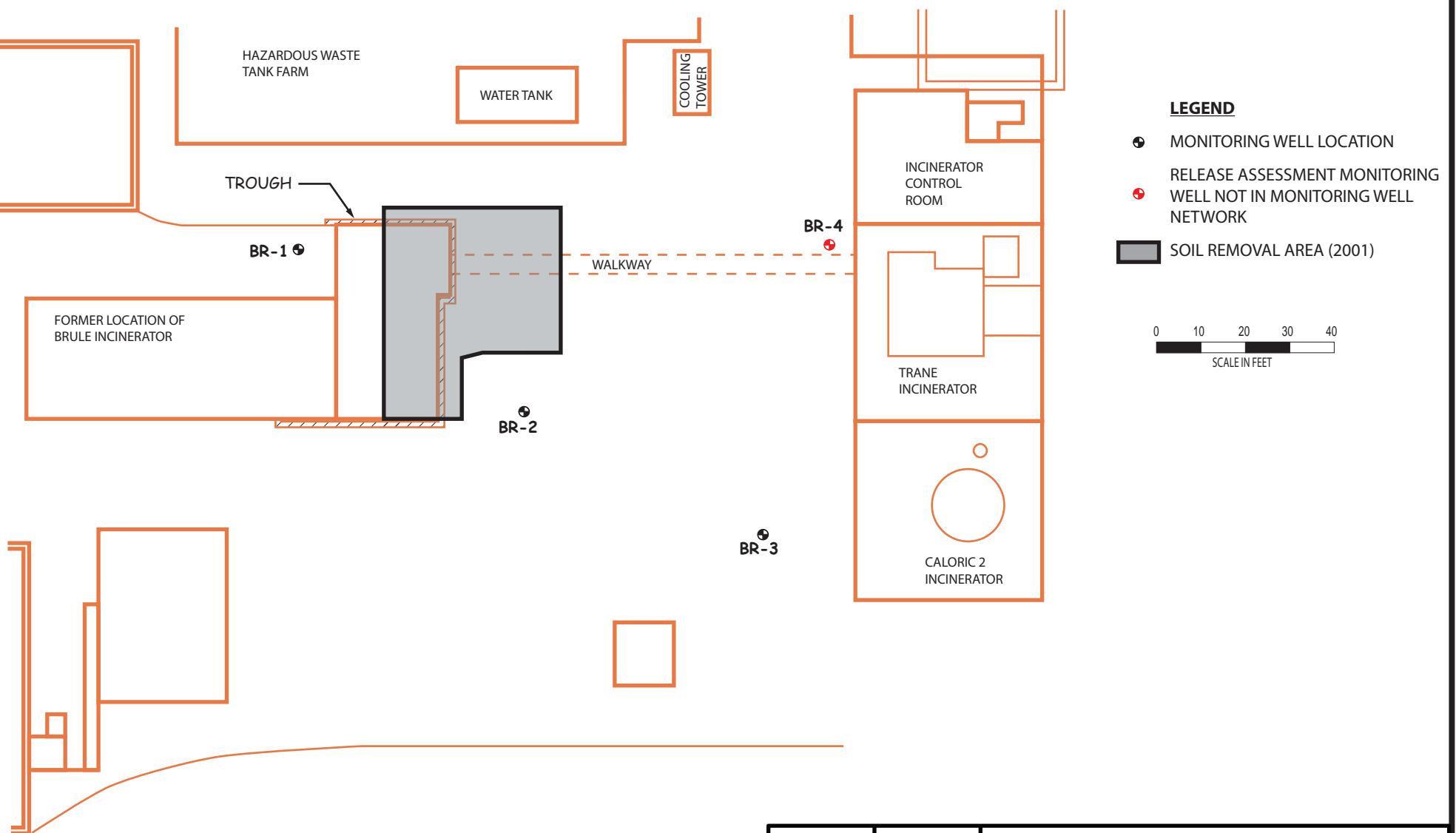


Figure 4
Location of Groundwater Monitoring Wells
Former Tank Farm Area

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Scale	Date
	Jul 2016

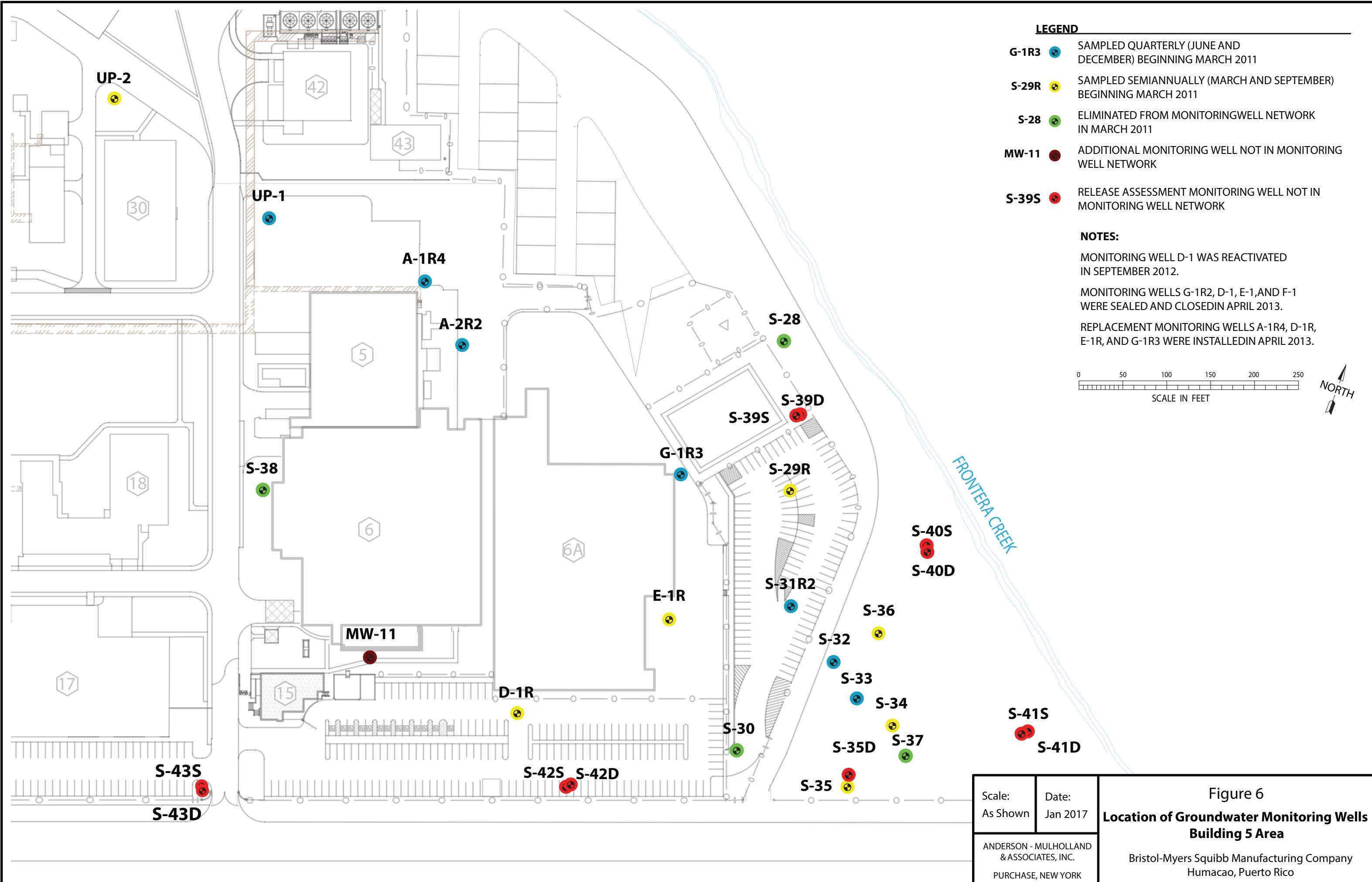
ANDERSON - MULHOLLAND & ASSOCIATES, INC.
WHITE PLAINS, NEW YORK
SAN JUAN, PUERTO RICO



Scale: As Shown	Date: Jul 2016
ANDERSON - MULHOLLAND & ASSOCIATES, INC. PURCHASE, NEW YORK	

Figure 5
Location of Groundwater Monitoring Wells
Brule Area

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico



Attachments (on CD)

Attachment A:

*3rd Quarter 2016 Groundwater Sampling Laboratory Analytical and
Data Validation Reports*

Attachment B:

3rd Quarter 2016 Groundwater Field Data Sheets